

# The Mining Journal

## RAILWAY AND COMMERCIAL GAZETTE

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The Mining Journal is Registered at the General Post Office as a New paper, and for Transmission Abroad.]

No. 2145.—Vol. XLVI.

LONDON, SATURDAY, SEPTEMBER 30, 1876.

[SUPPLEMENT.] PRICE SIX PENCE PER ANNUM, BY POST, £1 4s.

**MR. JAMES H. CROFTS, STOCK AND SHARE BROKER,**  
No. 1, FINCH LANE, CORNHILL, LONDON, E.C.  
Established 1842.

Business transacted in all descriptions of MINING STOCKS AND SHARES (British and Foreign), Consols, Bonds (Foreign and Colonial), Railways, Miscellaneous, Insurance, Assurance, Telegraph, Shipping, Canal, Gas, Water, and Dock Shares.

Business negotiated in Stocks and Shares not having a general market value. Business in Colliery and Iron Shares, and in the principal WAGON and MANUFACTURING COMPANIES OF THE NORTH OF ENGLAND AND SCOTLAND.

Business in all the principal COLONY SPINNING SHARES. Mr. J. H. CROFTS, having now established CORRESPONDING AGENCIES in all the Chief Towns of the United Kingdom, is prepared to deal in the various LOCAL Stocks and Shares at close market prices.

Accounts opened for the Fortnightly Settlement. Monthly and Daily Price Lists issued.

Bankers: City Bank, London; South Cornwall Bank, St. Austell.

**SPECIAL DEALINGS in the following, or part—**  
10 Alltani. 50 Gt. West Van, 11s. 3d  
25 Aberdaunt, 17s. 6d. 10 Great Lacey, £19 3/4  
15 Asheton, 41. 25 Glyn, 23.  
15 Bilton, 47 1/2. 40 I.X.L., £1.  
15 Cathedral, 17s. 150 Javali, 10s. 9d.  
10 Cedar Creek. 20 Llanrwst, 27s. 6d.  
10 Chapel House. 25 Llanrwst, 27s. 6d.  
10 Chantles, 5s. 9d. 50 Llanrwst, 27s. 6d.  
10 East Van, £10 1/4. 50 Llanrwst, 27s. 6d.  
10 Enma, 10s. 50 Llanrwst, 27s. 6d.  
15 Eberhardt, 23 1/2s. 6d. 50 Llanrwst, 27s. 6d.  
15 Echequer, 23 1/2s. 6d. 50 Llanrwst, 27s. 6d.  
10 Flagstaff, 30s. 50 Llanrwst, 27s. 6d.  
10 Frontino, 23 1/2s. 6d. 50 Llanrwst, 27s. 6d.  
\* Shares sold for forward delivery (one, two, or three months) on deposit of 20 per cent.

**SPECIAL BUSINESS in POSITIVE ASSURANCE SHARES.**  
Business on hand in all the principal TIN, COPPER, and LEAD SHARES.

**AQUARIUM, HOTEL, AND MISCELLANEOUS SHARES.**  
SPECIAL BUSINESS.—FOR SALE, 10 Brighton Aquarium, £15; 20 Royal (Westminster), £2 1/2s. 9d.; 5 Millford Docks (fully paid), £5 1/2s. 10 Midland Wagon (fully paid), 10 Royal Insurance, £15 1/2s. 15 Queen ditto; 10 Scottish ditto; 50 Britannia Fire, 1s. 6d.; 5 South Wales Smelting Company, £4 1/2s.  
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

**COLLIERY SHARES.—SPECIAL BUSINESS in ALLTANI, BILSON AND CRUMP, CHAPEL HOUSE, CAKEMORE, CARDIFF AND SWANSEA, NEWPORT ABERCARN, NEW SHARLTON, THORP'S GAWBER, WEST MOSTYN (Newman and Preference), and Others.**  
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

**COTTON SPINNING SHARES.**—These steady and remunerative Securities (comparatively little known on the London Market, but largely invested in the manufacturing districts) can be bought at the present time at unusually favourable prices to pay good dividends on the capital invested. The following Shares (Oldham Mills) are amongst the safest and best of their class:—

Name of Mill.	Nom. amount	Share.	Paid up.	per cent.	annum.	Closing quotations.
Central Spinning	£ 5	£2 10 0	30	10	30	£ 3 1/2
Green Lane	50	25	20	20	20	53 1/2
Rayton	50	25	20	20	20	53 1/2
Shaw	50	25	20	20	20	53 1/2
Star	50	25	20	20	20	53 1/2
Twist	50	25	20	20	20	53 1/2
Windsor	50	25	20	20	20	53 1/2

\* The accounts of all the above companies are made up and profits divided quarterly.

**FOREIGN BONDS.—ARGENTINE.—EGYPTIAN.—RUSSIAN, SPANISH, TURKISH. SPECIAL BUSINESS, and latest information.**  
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

**RAILWAYS.—SPECIAL BUSINESS.** Fortnightly accounts opened on receipt of the usual cover.  
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

**LEAD HILLS (LANARKSHIRE).—SPECIAL BUSINESS in these Shares.**  
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

**MR. WILLIAM H. BUMPUS, STOCK AND SHARE BROKER,**  
44, THREADENELL STREET, LONDON, E.C.  
[Established 1867.]

**SPECIAL BUSINESS, at close prices, in the SHARES of all the principal HOME and FOREIGN MINES.**

Mr. BUMPUS directs particular attention to MINING INVESTMENTS.

and is in a position to give reliable information and advice respecting the same. FOR SALE, at prices annexed:—

10 Aberdaunt, 15s. 6d.	25 Frontino, £2 3s. 9d.	100 Parys Monnt, 11s. 9d.
15 Argentine, 28s.	20 Gold Run, 10s.	30 Pennerley, 28s.
20 Pine Tent, 23.	20 Glyn, £3 1s. 3d.	10 Richmond, 49 1/2s. 9d.
10 Bilsley Creek, 16s. 3d.	50 Great W. Van, 12s.	15 Roman Grav., £13 1/2s.
10 Chicago (Silver), 100 I.X.L., 21s. 6d.	50 Javali, 10s. 9d.	70 Rookhope, 18s.
10 Cedar Creek, 11s. 6d.	30 Ladywell, 28s.	50 Santa Barbara, 10s.
10 Care Copper, 20s.	25 Marke Valley, 34s.	15 Tankerville, £10 1/2s.
10 Cordes of Chilli, 23 1/2s.	20 New Quebrada, 43 1/2s.	3 Van, £37 1/2s.
10 Devon Consols, £23 1/2s.	75 North Lacey, 11s. 6d.	40 Van Consols, 33s.
10 Echequer, £23 1/2s.	50 Penstruthal, 11s. 9d.	25 W. Tankerville, 33s.
15 Eberhardt, 23 1/2s. 9d.	20 Pateley Bridge, 43 1/2s.	10 Wheel Crebor, 23s.
15 East Van, £10 1/4s.		50 Wheel Grenville, 10s.

**SPECIAL NOTICE.—(ARGENTINE COMPANY (LIMITED)).**

Considerable attention is now being directed to these shares, and most desirably so. That the mines owned by this company are of extraordinary richness is no beyond doubt; all the reports fully confirm this, and the manager is confident that enormous profits will be realised as soon as the necessary machinery and appliances for treating the ores are completed. It is not too much to say that the prospects of Argentine are unequalled by any other property in the market. The shares, which are firm and in demand, have during the past fortnight advanced fully 20 per cent., and they will, no doubt, continue to improve in value on the merits of the property alone. A further and important rise may be confidently expected, and intending investors should, therefore, act without delay. Full particulars of the mines and every information concerning the company may be obtained on application to Mr. BUMPUS, who has special facilities for dealing in the shares.

**WILLIAM HENRY BUMPUS, SWORN BROKER.**

Business transacted in Stock Exchange Securities and Miscellaneous shares of every description. Fortnightly accounts opened. References given and required when necessary. A Stock and Share List forwarded free on application.

**BANKERS.—THE NATIONAL PROVINCIAL BANK OF ENGLAND, E.C.**

**MESSRS. HARVEY, JORDAN, AND CO., MINING ENGINEERS AND AGENTS, ACCOUNTANTS, AUDITORS, MANAGERS OF PUBLIC COMPANIES, &c.**

In connection with Messrs. TEAL, FOSTER, and CO., Georgetown, Colorado. Mineral Properties Inspected.

**LONDON OFFICES.—57 (late 30), MOORGATE STREET, E.C.**

**THE LANTERN TIT PLATE WORKS, THE PLANT SILVER MINING CO.**

**MR. GEORGE BUDGE, STOCK AND SHARE DEALER,**  
No. 4, ROYAL EXCHANGE BUILDINGS, LONDON, E.C.  
(Established 25 Years.)

As a buyer of any number of shares in North Cornwall Mine (Limited), and is a seller. He is prepared to deal in Great Lacey, East Van, West Chiverton; the shares attract considerable notice, whilst the mines are depressed because of the price of the metal. Mr. Budge strongly recommends lead mines, and in Cornwall a discovery has been made of a considerable tin mine. All particulars will be given on application. He advises great caution, and recommends his clients not to act without the fullest information.

**SPECIAL BUSINESS in—50 New St. Agnes, New Pembroke, Echequer, Chango, Parys Mountain, Chapel House, Prince of Wales.**

**LEAD MINE INVESTMENTS.—**

EVERY information respecting HOME and FOREIGN LEAD MINES may be obtained on personal application or by letter of—

**MESSRS. PETER WATSON AND CO., STOCK AND SHARE DEALERS,**  
54, OLD BROAD STREET, LONDON, E.C.

**MR. ALFRED E. COOKE, STOCK AND SHARE DEALER,**  
73, OLD BROAD STREET, LONDON, E.C.  
(Established 1853.)

**LEAD HILLS MINES.—SPECIAL BUSINESS.**

LEAD HILLS MINE.—SPECIAL INFORMATION.—This valuable property was alluded to in the "Special Investment Circular" for July last. Also—SPECIAL BUSINESS in LLANRWST and ABERDAUNT.

LLANRWST and ABERDAUNT SHARES dealt in at closest prices either as Buyer or Seller.

Every other description of Enterprise and Investment dealt in by—

**ALFRED E. COOKE, 73, OLD BROAD STREET, LONDON, E.C.**  
(Established 1853.)

**FOR FULL and EXCLUSIVE INFORMATION as to LEAD HILLS MINE, LLANRWST, ABERDAUNT, or ANY OTHER MINING PROPERTY.—RAILWAYS, FOREIGN STOCKS.—read the "Special Investment Circular" for OCTOBER (ready on Monday next). Price One Shilling; gratis to clients and correspondents.**

Edited and published by—

**MR. ALFRED E. COOKE, 73, OLD BROAD STREET, LONDON, E.C.**  
(Established 1853.)

**JOSEPH JOHN PYNE, MINING BROKER, STOCK AND SHARE DEALER,**  
6, BISHOPSGATE STREET LONDON, E.C.

Mr. PYNE having been connected with MINING ENTERPRISE for upwards of FOURTEEN YEARS, and having been a DIRECTOR of MINES in SHROPSHIRE, MONTGOMERYSHIRE, CARDIGANSHIRE, CARNARVONSHIRE, and YORKSHIRE, and also in VENEZUELA, has had special opportunities of acquiring knowledge in this particular branch of industry, and will always be desirous of giving every information in his power to any parties transacting business with him.

ALL DESCRIPTIONS OF SHARES are dealt in, including BRITISH and FOREIGN STOCKS, and RAILWAY SECURITIES.

**MR. T. E. W. THOMAS, SHARE BROKER,**  
3, GREAT WINCHESTER STREET BUILDINGS, E.C.  
Established 1867.

The following are the latest prices at which business could be done. Where the difference between the buying and selling price is wide transactions may be effected at an intermediate price:—

Buyers.	Sellers.	Buyers.	Sellers.
Aberdaunt, 10s. 6d.	10s. 6d.	Pateley Bridge, 10s. 6d.	10s. 6d.
Argentine Gold, 10s. 6d.	10s. 6d.	Pennerley, 10s. 6d.	10s. 6d.
Devon Great Consols, 10s. 6d.	10s. 6d.	Penstruthal, 10s. 6d.	10s. 6d.
East Caradon, 10s. 6d.	10s. 6d.	Plymouth, 10s. 6d.	10s. 6d.
East Van, 10s. 6d.	10s. 6d.	Prince of Wales, 10s. 6d.	10s. 6d.
Exchequer Gold, 10s. 6d.	10s. 6d.	Richmond, 10s. 6d.	10s. 6d.
Flagstaff, 10s. 6d.	10s. 6d.	Roman Gravels, 10s. 6d.	10s. 6d.
Frontino, 10s. 6d.	10s. 6d.	Rookhope, 10s. 6d.	10s. 6d.
Glenroy, 10s. 6d.	10s. 6d.	Santa Barbara, 10s. 6d.	10s. 6d.
Glyn, 10s. 6d.	10s. 6d.	San Pedro, 10s. 6d.	10s. 6d.
Great Lacey, 10s. 6d.	10s. 6d.	Sierra Buttes, 10s. 6d.	10s. 6d.
Great West Van, 10s. 6d.	10s. 6d.	South Condurrow, 10s. 6d.	10s. 6d.
Javali, 10s. 6d.	10s. 6d.	Tankerville, 10s. 6d.	10s. 6d.
Ladywell, 10s. 6d.	10s. 6d.	Tincroft, 10s. 6d.	10s. 6d.
Lead Hills, 10s. 6d.	10s. 6d.	Van Consols, 10s. 6d.	10s. 6d.
Marke Valley, 10s. 6d.	10s. 6d.	West Asheton, 10s. 6d.	10s. 6d.
North Lacey, 10s. 6d.	10s. 6d.	West Chiverton, 10s. 6d.	10s. 6d.
New Quebrada, 10s. 6d.	10s. 6d.	West Tankerville, 10s. 6d.	10s. 6d.
Old Treburrget, 10s. 6d.	10s. 6d.	Wheel Crebor, 10s. 6d.	10s. 6d.
Parys Mountain, 10s. 6d.	10s. 6d.	Wheel Grenville, 10s. 6d.	10s. 6d.

**JOHN RISLEY (SWORN), STOCK AND SHARE BROKER,**  
33, CORNHILL, LONDON, E.C.  
Established 18 Years.

References required with new business, or part payment in cash with orders. Business transacted at the following rates of commission:—Foreign Stocks, 1/2 per cent.; and Mining Shares of 4s each and upwards, 1 1/2 per cent.; under 4s, 1s. per share.

**SPECIAL RECOMMENDATION:—Parys Mountain, Wheel Crebor, West Chiverton, and Santa Barbara.**

**MESSRS. J. TAYLOR AND CO., 86, LONDON WALL, LONDON, E.C.**

**MINING ENGINEERS AND INSPECTORS, STOCK AND SHARE DEALERS.**

Have business in the following at close rates:—Cathedral, Devon Great Consols, East Van, Glyn, Great Lacey, Great West Van, Grogwinion, Llanrhaidar, Marke Valley, Minera, North Price Patrick, North Lacey, Pennerley, Penstruthal, Roman Gravels, Rookhope, South Condurrow, Tankerville, Van, Van Consols, West Pateley Bridge, West Tankerville, Wye Valley.

**FERDINAND R. KIRK, STOCK BROKER,**  
5, BIRCHIN LANE E.C.

**SPECIAL ATTENTION directed to FOREIGN BONDS and RAILWAYS.**

Some unusual opportunities are now offering for sale or purchase. Fortnightly accounts opened on the usual terms.

Wherever a difficulty arises as to the price of any security, whether quoted or not, application should be made as above, when full particulars will be forwarded by return of post.

**MR. JAMES STOCKER, STOCK AND SHARE BROKER,**  
2, CROWN COURT, THREADENELL STREET, LONDON, E.C.  
(Established 1818.)

**BUSINESS transacted in all kinds of STOCK EXCHANGE SECURITIES, also in every description of BRITISH and FOREIGN MINING SHARES.**

**SPECIAL BUSINESS in the following:—**

BRITISH MINES.	COLLIERIES.	FOREIGN MINES.
East Van.	Cardiff and Swansea.	Bilson and Crump, &c.
Glyn.	Eberhardt.	Frontino.
Pennerley.	Flagstaff.	Emma.
Van Consols.	Chantles.	I. X. L.
Grogwinion.	Port Phillip.	Malabar.
Pateley Bridge.	Rica.	South Aurora.
Tankerville.	Sweetland Creek.	Cedar Creek.
Roman Gravels.	Don Pedro.	York Peninsula.

**JAMES STOCKER, SWORN BROKER.**

Consols, Foreign Bonds, Railways, Bank, Telegraph, Gas, and all miscellaneous Shares bought and sold, and fortnightly accounts opened for same. Shares sold for forward delivery on receipt of cover. List of prices and every information for

warded on application. References given and required when necessary.

**BANKERS: LONDON AND WESTMINSTER.**

**MR. CHARLES THOMAS, MINING AGENT, STOCK AND SHARE DEALER,**  
5, GREAT ST. HELEN'S, LONDON, E.C.

**MESSRS. A. W. THOMAS AND CO., MINING AGENTS, AND STOCK AND SHARE DEALERS,**  
10, COLEMAN STREET, E.C.  
"INVESTMENTS AND SPECULATIONS FOR 1876."  
Post free for six stamps.

**TO INVESTORS AND SHAREHOLDERS.**

**SHARES FOR SALE, FOR CASH.**  
Offers can be made in "Lots," or less numbers would be sold:—

LEAD.	TIN.
200 ABERDAUNT	200 PENSTRUTHAL
90 ASHETON	150 PATELEY BRIDGE
200 CENTRAL VAN (offer)	200 PENNERLEY
100 EAST CHIVERTON	200 PRINCE OF WALES
30 EAST VAN	50 ROMAN GRAVELS
200 ELGAR	150 ROOKHOPE
50 GLENROY	100 SAINT PATRICK
100 GLYN	200 TALLYBONT (offer)
200 GREAT LACEY	60 TANKERVILLE
200 GREAT WEST VAN	12 VAN
65 GROGWINION (offer)	100 VAN CONSOLS (offer)
200 LADYWELL	100 WEST TANKERVILLE
100 LLANRWST (offer)	100 WEST WYE VALLEY
200 MEDLYN MOOR	5 WEST WHEAL SEION
50 MONYDD GORDDU	100 WHEAL CREBOR
190 NORTH LACEY	50 WYE VALLEY (offer)
200 PARYS MOUNTAIN	100 WEST GOGINAN

N.B.—A few of the above will be sold much under present market quotations.

**OFFERS CAN BE MADE.**  
GOULD SHARP AND CO., STOCK AND SHARE BROKERS,  
42, POULTRY, LONDON, E.C.

Established 1852. [Bankers: London and Westminster, Lothbury, E.C.]

**GROGWINION LEAD MINE (LIMITED).**

**MESSRS. H. HALFORD AND CO., STOCK AND SHARE BROKERS, OF EXCHANGE CHAMBERS, CHANGE ALLEY, LOMBARD STREET, LONDON.**

Strongly recommend the ABOVE MINE as one of the BEST and SAFEST MINING INVESTMENTS. The dividends are declared half-yearly—the one for the last half year was 12 1/2 per cent.; the next one will probably be 20 per cent. The "reserves" are valued at £200,000. Every information upon application to the above.

Daily Closing Price Lists of Mines and all other Securities sent post free on application.

Messrs. H. H. and Co. are BUYERS of Shares in GROGWINION MINE, and also of Shares in WYE VALLEY LEAD MINE; and they will be GLAD TO HEAR from BROKERS or DEALERS who have ANY FOR SALE.

**MR. EDWARD ASHMEAD, LONDON MINING AGENT, ACCOUNTANT, AND AUDITOR,**  
CORNHILL CHAMBERS, 62 AND 63, CORNHILL, LONDON, E.C.

Twenty years' uninterrupted experience (from 1855). Information on Mines and Mining Companies will be given personally or by letter.

**ESTABLISHED TEN YEARS.**

**MR. E. J. BARTLETT, STOCK AND SHARE DEALER,**  
No. 30, GREAT ST. HELEN'S, LONDON, E.C., has SPECIAL BUSINESS in St. Patrick, Wheel Whisper, Pennerley, South Tolarno, East Lovell, East Van, Pennant, East Caradon, West Craven Moor, Lead Hills, Minera, and Parys Mountain shares.

**MESSRS. ARCHARD JONES AND CO., STOCK AND SHARE DEALERS,**  
No. 7, NEW BROAD STREET, LONDON, E.C.

The September Edition of "The Investment Circular and Financial Record" will be found to contain particulars of several highly eligible investments, well worthy the immediate attention of capitalists and investors. Post free on application.

**MR. WILLIAM WARD (LATE WARD AND LITTLEWOOD), OF 95, BISHOPSGATE STREET, WITHIN, E.C., STOCK AND SHARE BROKER.**

**MESSRS. A. ENDEAN, FISHER, AND CO., STOCK AND SHARE DEALERS, 3, LOMBARD COURT, LOMBARD STREET, E.C.**  
Bankers: London and Westminster, Lothbury.

**LLANRWST MINE.**—It is unnecessary for Brokers and Dealers to advertise these shares for sale at ridiculous prices, except for the means of decoy, as they are readily bought by—

**ENDEAN, FISHER, AND CO., of 3, LOMBARD COURT, E.C.**

**ABERDAUNT LEAD MINE.**—ENDEAN, FISHER, AND CO., of 3, LOMBARD COURT, E.C., are BUYERS of ONE THOUSAND SHARES. *Bona fide* sellers need not advertise. The public would do well to be cautious of parties offering them at low prices.

**BODIDRIS LEAD MINING COMPANY (LIMITED).**

Capital £50,000, in £1 shares.

Messrs. ENDEAN, FISHER, AND CO., call particular attention to the prospectus of this company now issued; they are confident it is one of the best, and most substantial undertakings placed before the public.

The present prospectus, and the discoveries made, are guarantees of its future prosperity. Those who wish to invest in one of the prizes of the day should communicate with us at once. Prospectus and map forwarded on application.

**ENDEAN, FISHER, AND CO., 3, LOMBARD COURT, LONDON, E.C.**  
Bankers: London and Westminster, Lothbury.

**MR. THOMAS THOMPSON, JUN., 1, PALMERSTON BUILDINGS, BISHOPSGATE STREET, LONDON, E.C.**

Mr. THOMPSON strongly recommends the purchase of the shares of the CHAPPEL HOUSE COLLIERY COMPANY (Limited) for investment. This company, notwithstanding the stagnation in trade, clears a profit of 2s. per ton on its coal, and when the new works are completed the present handsome returns will be much augmented.

**MESSRS. W. J. TALLENTIRE AND CO., STOCK AND SHARE BROKERS,**  
20, CHANGE ALLEY, CORNHILL, LONDON, E.C.

Transact business in Stock Exchange Securities and Mining Shares of every description, either for immediate cash or the usual bi-monthly settlements, and also afford advice personally or by letter to executors, trustees, capitalists, and investors of every class in the selection of Securities for sale and profitable investment, their experience of the markets, extending over a period of more than sixteen years, together with special facilities for acquiring information, enabling them to act beneficially for clients.

They have established Corresponding Agencies in all the principal towns of the United Kingdom, and are prepared to deal in the various local Stocks and Shares at close prices. Orders per post or telegraph receive prompt attention.

**INVESTORS SHOULD APPLY for a copy of Messrs. W. J. TALLENTIRE and Co.'s Circular, SENT POST FREE.** It contains valuable information on Foreign Stocks (especially South American, Egyptian, and Turkish), Railways, and Lead Mines.

**FOR SALE, the WHOLE or PART:—**  
65 CHAPPEL HOUSE COLLIERY.  
100 PARYS MOUNTAIN COPPER.  
10 GREAT LACEY LEAD.  
10 GLENROY LEAD.  
100 KINGSTON CONSOLS SILVER-LEAD.  
30 LEAD HILLS LEAD.  
30 MINERA LEAD.

Also, some SHARES in a VALUABLE SILVER MINE, paying 20 per cent. upon price required, with a probability of paying 100 or 200 per cent.

Address, H. WILKINS, 5, Finsbury Chambers, London Wall, E.C.

**STOCK.—HAYWARD TYLER AND CO., of LONDON, have now ready ENGINES, BOILERS, and "UNIVERSAL" STEAM PUMPS, having made extensive alterations in their premises to enable them to keep a stock.**



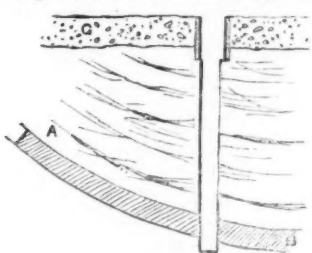
## Royal School of Mines.

## PROF. SMYTH'S LECTURES ON MINING—No. XLVII.

[BY OUR SPECIAL REPORTER.]

It is only during the last 25 years that anything like an accurate record has been kept of the deaths from accidents in collieries; and as regards the metalliferous mines, an Act has only just recently come into operation, and it is, therefore, difficult to make a trustworthy comparison between the number of accidents in the two classes, and in different parts of the mines. It has been attempted in other countries of Europe to compare the comparative danger of travelling on ladders, as against ropes and the man-engine, but so far the results have not been very satisfactory. There is very little doubt, however, that where the pits are fitted out in the best manner, and where proper attention is paid to the renewal of any part as soon as wear has been observed, the number of accidents has been comparatively very small in the large collieries of this kingdom, as well as in France and Belgium; but then when they do occur shaft accidents are very serious, from their being usually accompanied by a number of deaths. One may feel very sure that the number of accidents are comparatively slight when either of these methods is employed with proper precautions—when the ladders are placed under proper conditions, and the man-engine properly supplied with stops and catches, and made of suitable strength. When accidents occur under those conditions also they may generally be limited to individuals, but where ropes and chains are employed the total number of accidents to individuals may fairly be expected to be more numerous, because of each being more fatal. A great number of accidents are returned as shaft accidents which are due to other sources of danger besides the actual working of the shaft, as where masons are engaged in repairing the brickwork lining, and the platform tilts, or the rope gives way; and, again, from people falling into the shaft, not so much from their walking into it at the surface as when a workman running his wagon down an incline to the shaft, at an intermediate level, and overshoots his mark. The mouth of the shaft should be protected by means of gates, or some arrangement, for in thick weather the men at the surface may be precipitated into the pit, or when, for example, the smoke from a fire at the surface blows in their faces, &c. Various methods of guarding are employed; in some cases there are rack gates, or guards, round the mouth, only to be removed when a cage comes up. In our metalliferous mines it is usually the case that the top of the shaft is guarded by a strong heavy door, with a string from it passing over the pulley to a counterpoise; an opening is left for the chain to go through, so that the winding may go on. This is undoubtedly a great stoppage to the ventilation, so that it may be very advisable to keep the door more or less open; notwithstanding, no accident is likely to occur, for no one can fall down the shaft, and the door prevents any pieces of stone from the kibble falling down. Another plan may be seen in use in Central England, where what is called a runner is employed. On either side of the shaft for a few feet back is placed a pair of rails on which a wagon frame supporting a rectangular platform—the runner—stands. When the shaft is at work, but not having the weight raised, it can be left open, if required for ventilation; at other times the runner is placed over it, having a slit for the chain to pass through: when the kibble has passed up the runner is placed under, and the kibble lowered gently down on to it, and it is then drawn back for the kibble to be emptied. A great number of men have lost their lives by attempting to step out of the kibble, or carriage, too soon, and setting it swinging; here they have only to wait till it is lowered on to the runner, and then can step safely out. It was found necessary, however, to guard the top of the pit during working by something which would not interrupt the ventilation, hence air frames were introduced, first in South Wales. Light frames of wood placed over the shaft are lifted up by the cage when it comes up, and let down on to the top of the shaft as the cage descends, a long elastic bar of wood forming the bottom lath, so that the frame should not suffer too much from the concussion. This has been generally replaced by the shaft door, which is a little light door, placed in grooves, to run up and down, and struck open by the cage as it comes up.

We must now turn to the subject of the extraction of water from the pits. And we have to remember that water makes its entrance into pits in a number of different and peculiar ways. Under some circumstances it will be found necessary to keep the pump going incessantly; under others, as we have seen, the expense and trouble are very great at first, but when once overcome (by tubbing, &c.) it will be kept back as long as proper precautions are kept up. Even in cases where a great deal of water may be kept out by surface drains, &c., still a great deal of pumping will have to be maintained. We have to consider the water which passes down the pit, and also that which makes its way through the joints and cracks of the seam itself. Very frequently there will be a gravelly deposit at the surface (G, Fig. 34), which will admit a great deal of water,



and if this can be completely excluded by tubbing, &c., much of it will be kept out of the workings. Very frequently, in the greater number of our collieries, the bed (A B) has been worked down to a considerable distance from its outcrop (as down to A, Fig. 34), and there are more or less extensive reservoirs of water in those old workings which have to be guarded against; and from these water will ooze, as well as through the measures and the joints. If the measures are uncomformable you have to consider what will be the results of your manner of working. If the measures above, at G, are very watery it will be unwise to adopt any method which makes much goaf, and the same if you have above you a worked seam which contains much water.

In metal mining the adit will drain the ground down to its own level; if the ground is to be worked below the adit then the water will have to be raised up to that. You will find the water in the shafts and the ends of the workings, and this water, instead of lying horizontally, forms a kind of inclined plane, the angle of which varies in different ground, so that in some cases you will have to drive close up to the parts you wish to unwater. In other cases, if the lode is large and open, full of joints and cavities, the sinking of a few fathoms below will unwater the ground to a considerable distance around. The consequence is that there is a difference between the quantity of water which you can take up at one point and that which you may expect to pump; there will be a number of feeders coming into the ground which you may take up into the adit level, or if you leave them they will go further down. It is, however, to be observed that the quantity of water obtained from these feeders diminishes as you go down. The important point is to make good as far as you can the damage at the surface, and then to take up all the water you can from time to time, so as to prevent it going down to the deeper workings, and you will thus gain in having to pump it from as small a depth as possible. It will generally be found that the upper pumps have to be of much larger calibre than the lower ones; the upper ones may be 16 or 18 inches in diameter, the lower ones only 6 inches.

In working mines you not unfrequently come on very watery places, when the question arises whether you cannot keep back the water altogether, and prevent it troubling you further. For exam-

ple, in a colliery where you have driven a stone drift from one district to another, it might happen that this latter was very watery, you might then require to shut it off altogether, and this you could do by putting in a strong water-tight dam. Similarly in metal mines, a cross-cut may pierce into very watery ground, and it may be necessary to dam it off. These dams are generally either of timber or stonework. A suitable spot is selected in the ground to be dammed, where the superficial area is not too considerable, where the ground is of a water-tight character and we can trust to its being free from fissures, and where a suitable bed can be cut without the necessity for blasting. A conical excavation is cut out as a bed, with a vertical shoulder, against which the timbering can abut. A series of beams are then placed in, abutting against one another, and having a piece of sheeting deal where it comes in contact with the rock, and an opening will be left in the central part large enough for a man to creep through. The door over this opening will be kept open while the men are at work on both sides; it is made to fit close against the man-hole by means of leather. The back of these beams will be caulked full of wedges, just as in the case of tubbing, and very commonly the back will be supported by planks and struts abutting against vertical, or more usually horizontal, props let well into the sides. A cast-iron pipe passing through the dam is all this time conveying away the water which accumulates at the other side, so as not to inconvenience the men. Another precaution is necessary; when the dam is completed and closed, and the water begins to accumulate, it will most likely bring with it air, which will accumulate at the top of the level, and give rise to very serious pressure if means are not provided for its escape. This is done by placing a small iron pipe in the upper part, and leaving it open for a time. When all is ready the men retire, the water pipe is plugged up, and when the air has escaped the upper pipe is also plugged, and the man-hole is effectually closed by the pressure of the water on the door. The thickness of timber used will depend on the amount of pressure; if not very considerable stout planks may suffice; if great, stout logs of wood will be taken, and set vertically side by side. The best of all these dams is formed in a conical shape, where a number of beams of 4 to 6 ft. long are put in, and fitted like the stones of an arch, with the convexity towards the pressure, having a cast-iron pipe in the middle just large enough for a man to get through, a small hole below for the water to flow from for the time being, and a small pipe above for the escape of the air. Such a frame, made of a thickness of 6 ft. over a superficial surface not too large, may be made to sustain very heavy columns of water. A structure of this kind, made of pieces of fir well fitted together, will generally be found to move considerably at first, when the pressure comes into play, but if well made, and the conical bed well cut, the pushing forward of the mass some inches need not surprise or alarm us. Sometimes the more difficult task has to be performed of putting dams into shafts; they occur, however, but rarely compared with those in the levels. They require greater attention to the nature of the bed. They are constructed of timber, or heavy masses of brickwork, usually of an arched form, and sometimes double, with clay well rammed between. In Westphalia and Belgium a good many shafts have been protected more or less in this way, and in our own colliery districts cases are not uncommon.

We come next to a very large and important part of our subject—that of pumping. It is not many years ago since pumping arrangements in parts of Europe were very deficient. The pumps of the middle ages were very ingenious, but exceedingly expensive, for we find they were mainly worked by horse-power, and sometimes nearly half the expenditure of the mine had to go to this item. In copper mines in the Ural Mountains, described by Pallas, although the deepest was only 28 fms., 400 horses had to be kept for working the pumps, while there were only 200 miners at work. In the eastern parts of Europe, in consequence of the much smaller rainfall compared with that of the western districts, pumps of much smaller calibre are necessary. But in our own country, and especially in the south-western districts, many of the mines are troubled with very large volumes of water. In shallow workings simply drawing the water in kiddles or water barrels, by means of a windlass may be sufficient, and tipping it into a suitable channel at the surface. This is often carried out on a large scale, and when the quantity of water is not large with great advantage. In North Staffordshire what are called typing barrels are largely used where the bow of iron by which the barrel is supported is fixed not far from the centre of the gravity of the barrel. The barrel is kept erect by a ring of iron on this hoop being also passed over a pin at the top of the barrel, and the barrel is emptied by knocking off this ring, and then very easily overturns it. At the Ebbw Collieries barrels of sheet-iron 16 ft. long are employed, each holding 800 gallons of water; they are emptied at the surface by bringing them down on to a runner, which opens a valve in the bottom, and then conducts the water away. By this arrangement as much as 1000 gallons per minute were being raised by four ropes. One of the most remarkable cases the lecturer had met with as to the presence of large quantities of water he had seen recently in an iron mine, where he found them lifting from a depth of 120 yards no less than 2000 gallons per minute; in fact, they were raising about as much water every day as they raised iron ore in the course of the whole year. And it is well known in a great number of our colliery districts that they may have to raise 10 to 30 times as much water as useful mineral.

**EXPERIMENTS WITH DYNAMITE.**—A series of interesting experiments with dynamite were made, on Tuesday, at Messrs. Savin and Co.'s Limestone Quarries, Llanymynech. There was a large attendance, among whom we noticed Colonel Bonner, Capt. Mostyn Owen, Dr. Fuller, Capt. Underwood, Dr. Mitchell, Rev. M. Owen, and Messrs. James R. Barnes, P. G. Bentley, Arthur Mostyn Owen, Hilary Tudor, S. Forster, E. Homfray, John Evans, M.A., T. Savin, H. Savin, Geo. Owen, C.E., James Eaton, L. Blackwell, — Wamsley, A. Walker, John Morris, G. Saunders, — Corney, — Evans, — Cobley, G. L. Evans, — Pattison, manager of Ruabon and North Wales Colliery; Owen Roberts, — Sutton, Stephen Toye, manager of North Wales Mineral Phosphate Company; Jabez Toye, and many others connected with mining and quarrying enterprise. The experiments were carried out by Messrs. J. and N. Toye, representatives of the British Dynamite Company, superintended by Mr. Thos. Johnson, of Dudley. The first experiment was on the brow of the quarry. A hole, 7 ft. deep by 2 in. diameter, was bored about 12 ft. from the margin of the quarry, 1½ lb. of dynamite was rammed home, and the shot fired, the result being that the whole mass was shattered and fractured, so much so that it could be readily got by the aid of a crowbar. The second and third shots were opposite the last one. The holes were put in about 6 ft. deep, both were charged with 1 lb. of dynamite, and the shots were fired, giving satisfactory results, the holes getting every pound of stone allotted to them, shattering and toppling over upwards of 60 tons of limestone. The next trials took place in the bottom of the quarry. Four holes were put into a strong ledge of rock, two of them tightly keyed in the corner of the quarry. It was decided to fire them simultaneously, and to show the extra saving of time the holes were stemmed with water instead of hard ramming. The fuses being fired each shot exploded, uprooting an enormous mass of stone. The visitors evidently seemed delighted with the results of these charges, and expressed their opinion as to the enormous strength of dynamite over powder. There were several deep holes fired, with very favourable results, after which a number of large loose stones were broken, by simply placing a cartridge on the surface with a little clay over it. Thus showing the visitors that dynamite has a tendency to strike downwards, whilst powder strikes upwards, and, therefore, effects a great saving in boring and stemming. A 6-ft. dynamite hole can be charged or stemmed in one minute, whilst to do the same in a powder hole would take at least six minutes. A dynamite hole can be stemmed with water instead of the ordinary ramming, and as a result it saves time, labour, and the wear and tear of tools, a wooden rammer being used, which gives great immunity

from accidents. The weather was exceedingly favourable, and the party, who seemed thoroughly satisfied with the day's experiments, returned to Oswestry by special train.

## THE IRON AND STEEL INSTITUTE IN LEEDS.

Those members of the Iron and Steel Institute who attended the Leeds meeting were well rewarded for their pains. So far at least as the excursions were concerned it is long since a greater variety of choice was presented to seekers after knowledge in the domain of practical metallurgy and engineering. Nearly 30 works of different kinds were open for inspection on production of the "open sesame" of a member's ticket. The great majority of these were either iron or engineering works, although a few were remote from direct affinity with either iron or steel. The iron trade of Leeds, although it cannot for a moment bear comparison with either Cleveland, Barrow, or Lincolnshire in point either of extent or rapidity of growth, has nevertheless made very remarkable advances within the last quarter of a century. When the British Association visited Leeds in 1858, Mr. James Kitson laid before it a short statistical statement as to the then position of the iron trade in the Leeds district. He calculated that there were in 1847 six blast-furnaces, which four were in the blast, making 12,745 tons of pig-iron, but in 1857 the trade was employing 2120 hands, who received an average of 2540l. in weekly wages. In cut nails Leeds employed, in 1857, 188 hands, producing 3452 tons. The manufacture of locomotives, or other engines, axles, railway bridges, &c., employed 4023 hands, and the total value of the materials produced was 672,000l.; the total value of the capital invested in plant, &c., being estimated at 283,500l. Upwards of 3000 miners were then employed in raising the ironstone and coal required for ironmaking purposes, at an average wage of 1l. per head per week. The quantity of clay ironstone raised in the West Riding in 1859 was 207,500 tons, and the total quantity of pig-iron, both hot and cold blast, produced in the West Riding in that year was 117,000 tons, while the North Riding yielded 179,838 tons, the aggregate production of the blast-furnaces of Yorkshire being 296,838 tons, as against 276,500 tons in 1856; and it is a matter of no little interest to point out that, as compared with these 276,500 tons of pig-iron produced in 1856, Yorkshire last year produced fully 2,000,000 tons in Cleveland and the West Riding together. The following is a list of the principal finished ironworks now in operation in Leeds and its neighbourhood:—

	Puddling	Rolling	Mills
1.—Albert (Hunslet).....	Coghlan and Dury .....	24	—
2.—Clarence.....	Taylor, Brothers, and Co. ....	19	—
3.—Farnley.....	Farnley Iron Company .....	19	—
4.—Kirkstall Forge .....	Messrs. T. J. O. and A. Butler ..	24	—
5.—Leeds.....	S. T. Cooper and Co. ....	19	—
6.—Monk Bridge.....	Monk Bridge Iron Company .....	24	—
7.—Thornhill Leeds.....	Ditto .....	19	—
8.—Perseverance.....	J. Whitbarn and Son .....	40	—

There are a number of small firms that do not find a place in the above list, but whose works, nevertheless, were open to inspection, while the great bulk of the engineering works—which are the chief feature of the Leeds district from a manufacturing point of view—are open for inspection.

Subjoined are notes which I was enabled to make on the spot relative to some of the principal works in Leeds itself:—

## THE KIRKSTALL FORGE COMPANY'S WORKS.

A party of about 150 members of the Institute visited the works of the Kirkstall Forge Company on Friday afternoon. They were met at the station (which takes its name from the forge, and is on the Midland line, between Leeds and Skipton) by the Messrs. Butler, who conducted them over the works. The Kirkstall forge has been in possession of the family of the present proprietors since 1770, and gives employment when in full to about 1000 hands. The best quality of Yorkshire iron is here manufactured into railway tyres, axles, cranked axles, bars, &c., and the firm have also large shops devoted to the making of railway wheels and axles, and capable of turning out 150 sets per week. They also manufacture steam-hammers, cranes, boilers, &c. They also turn out large quantities of round bar-iron for shafting and machine makers' purposes; and one speciality shown to the members was a machine for straightening and planishing, or smoothing, such bars, which by this process are not only straightened but so compressed as to gain 20 per cent. in torsional strength. From a statement prepared by Mr. Edmund Butler, relative to this excellent machine, we gather that the "original idea of which it is an embodiment is due to Mr. James Robertson, of Glasgow, though the same idea seems to have occurred almost simultaneously to Mr. G. W. Dyson, of Sheffield, and it is the general arrangement of the latter which has been adopted, though since it passed out of the hands of these gentlemen, many improvements and additions—the results of practice and experience—have been made, which have given it the success it has now attained. The bars are passed while still hot from the rolls between two revolving discs having bevelled faces, which, when brought together so as to compress the bars between them with the degree of force thought necessary, rotate them, and at the same time traverse them forwards, also by a mechanical arrangement backwards, so that the whole length of the bar is acted on by one continuous movement, and the bars come out straightened and planished. In doing this, moreover, two very important results are produced, the most palpable of which is that the scale, instead of being rolled in, as might be supposed, is entirely removed, and the surface is made smooth. Mr. Butler also states that "with a view to render as economical as possible the operation of planishing these bars bright with emery, and without the expense of centring and putting in the lathe in order to use the emery stick, a machine has been constructed by Mr. Robertson to rotate and traverse the bars across the face of an emery wheel; and this first machine, on which great improvements are now being made, was only set in motion last week, on the day preceding the visit to the forge. It did its work with great facility and efficiency, and elicited from a number of practical gentlemen present the opinion that it did the work of a lathe in a much more expeditious and economical manner. Alongside this machine were shown a number of bars—one brightened cold in the straightening machine, another polished with emery stick, and another machine straightened and planished hot from the rolls. Other samples were shown with one end left blue, as it came from the straightening and planishing machine, and the other polished with emery stick.

In passing through the works the visitors were shown a large number of railway wheels and axles for the Indian State Railway in course of construction. The Joe Pickles Mechanical Rattle, worked in preference to the old reverberatory furnace at the Kirkstall Forge, was also seen in process of construction. The proprietors of the Kirkstall Forge are very much satisfied with the results which they have obtained by the use of this rattle, finding that it is a very efficient compromise between the ordinary puddling-furnace and the rotary furnaces of Danks or Crampton. Mr. Joe Pickles, the inventor of the furnace, who is one of the foremen at the forge, was present to explain to the visitors its mode of working, and it was stated that several of these furnaces have been supplied to works in Staffordshire and the North of England. A number of forgings were shown that had not been made under the hammer in the ordinary way, but squeezed into the moulds of the Haswell press, which enables a squeeze to be given, either reciprocating or in one continuous thrust, until the piece operated on acquires the desired shape. The samples shown included a section of a 12-axle wrought-iron locomotive wheel, showing three spokes with cast portion of rim and bars pressed out of the solid slab; a locomotive cross head; an outside crank with its pin; a piston rod socket; a locomotive axle box. In passing through the erecting shop, which is a long but rather narrow building with pits in the centre for building up machinery, the visitors were shown a Haswell press in course of construction for the Yorkshire Hydraulic Forging Company—a new concern that has recently been formed, and is erecting large works about a mile from Kirkstall. This press was stated to be capable of exerting a pressure of 1250 tons. It had a stroke of



THE CHAIRMAN believed that the largest capital that could be secured was desirable, and he felt that if the issue of the 15s. shares were determined upon, the whole of the shares in the company would come to be generally regarded as 15s. shares, and priced in the market accordingly. The other plan would obviate this difficulty, but would require a contract to be registered, a month's delay being occasioned thereby. He also pointed out that the proposed scheme would be carried out in comparison with the settling of the capital of the company upon a satisfactory basis. It was for the shareholders to determine what they would do. To put the meeting in order, he would propose that the scheme which they had heard read—that was, for the creation of the 15s. shares, be and is hereby adopted; and to this any shareholder could now move an amendment.

Dr. GIBSON decidedly preferred the issue of the 15s. shares to the issue of more than 100,000 shares, and he would suggest a modification of the resolution which would make the old proposition yield the same amount of capital as the new one; he would, therefore, propose an amendment of the Chairman's motion—"That the capital of the company be increased from £8000, to



[For remainder of Meetings see to-day's Supplement.]

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## Mining Correspondence.

## BRITISH MINES.

**ABERDAUNYAN.**—S. Toy, Sept. 27: The new shaft is down 18 fms. 3 ft., and the water is increasing on account of so much rain. The deep adit level is made secure with timber, and the men are again driving the cross cut towards the new shaft. In the east part of the set (Crown) the cross-cut driving towards the south lode is still in very hard ground. Surface: If we can get a little fine weather I hope the masons will finish building the engine house in another week.

**ASHETON AND WEST ASHETON.**—John Craze, Joel Manley, Sept. 21: Joint Ashteton and West Ashteton: The boundary shaft is down deep enough for an 80 fm. level. The lift has been fixed to the bottom and the shaft divided and cased, and footway put in complete. The men are engaged cutting the 80 ft. and extending the levels east and west. The rise from the 60 to the 50 is communicated, which gives good ventilation. West Ashteton: The 60, west of boundary cross-cut, is extended about 17 fathoms, set to four men, at 50. per fathom. The portion of the lode carried is producing good stones of lead and blende, and lets out water freely—a most promising lode. We shall cut into the south part during next week. Ashteton Proper: The 60, east of cross-cut, is extended 19 fathoms. Stent not cut. Driving at 8. 10s. per fathom, and 10s. per ton for all lead saved. The lode is large, producing good stones of lead and blende, of promising character. A stope in the back of the 40, west of Browne's shaft, by two men, at 30s. per fm.; worth 15 cwt. of lead ore per fathom. A stope in the back of the same, by two men, at 40s. per fathom; worth 1 ton of lead ore per fathom. A stope in the back of the 40, east of boundary cross-cut, by two men not yet sought; worth 1 ton of lead per fathom. We have set the following tribute pitches:—Two men in the back of the 20, east of Maur's shaft on the north lode, at 8s. per fathom. Two men in the back of the 20, east of Maur's shaft on the south lode, at 7s. per fathom. Two men in the back of the 20, east of Maur's shaft on the west lode, at 7s. 15s. per fathom. Two men in the back of the 8, east of Maur's shaft, at 8s. per fathom. Two men in the back of the adit, on the north and south lode, at 7s. per fathom. Three men in the back of the adit, on the north and south lode, at 6s. 10p. per fathom. Two men in the back of the adit, on the north and south lode, at 7s. per fathom. Two men in the back of the adit, on the east and west lode, east of Cambrian shaft, at 7s. 10s. per fathom. We shall ship both parcels of lead to-morrow. The bill of lading shall be forwarded in due course. We are making fair progress in dressing, and another sampling. The machinery and pit-ways are all in good order, and working well.

**BEDFORD UNITED.**—R. Goldworthy, William Phillips, Sept. 28: The lode in the 127 east is 2 ft. wide, 160. per fathom. The lode in the same level west is opening out wider, and producing good saving work. The 115 east is passing through a cross-course, and as far as seen is 2 ft. wide, dipping east about 2 ft. in 6 ft. Driving is continued by the side of the lode in the western end. The lode in the 103 east is worth 10s. per fathom. In the same level west the lode is still under the influence of the cross-course, the lode is 1 ft. 6 in. wide, producing saving work. The stopes are producing their usual quantity of ore.

**BELSTON.**—James Neill, Sept. 23: A Shaft: The 80 cross-cut south driven this week 1 fm. 0 in. Total distance from shaft, 20 fms. 4 ft. 3 in. The drive has been continued this week without any interruption, and good progress has been made. The strata still retain the favourable features mentioned in my last report; and we have this week met with a branch underlying north, about 6 in. thick, chiefly composed of garnet, chlorite, hornblende, quartz, &c., and from which we have broken some fine stones of lead ore, auriferous mudstone, and mica. The lode is still producing lead, and which, from all indications, we are not getting very near to. C Shaft: The stope in the back of level, east from cross-cut north, on No. 2 cross-course, at 40 fm. level (north part of lode), is looking much the same as last week, still showing good branches and nests of black and yellow ore. Circum's tribute pitch has again improved this week; at present showing a very good nest of black ore, with congealed matrix around it.

**BLUE HILLS.**—S. Bennetts, A. Gripe, Sept. 23: We have progressed so far as possible in opening out on the lode from the rise above the 50 fm. level until we are enabled to draw up some of the stuff, consequently the men are now engaged in fixing the skip-roads, which we hope may be completed by the end of another week. The lode continues to look highly promising so far as yet seen, although not quite so productive in the east end as last reported, which at present is worth 6s. per fathom, and the west end 8s. per fathom.

**BURDICKS.**—H. Hotchiss, Sept. 18: We are getting on well with the dressing floors. The lead-kiln will be completed to-morrow, and will receive ore the following day. There is a good pile of lead stuff at pit bank, which will be carted to the dressing floors. Flat boulders and larders are completed. The 30 level east is still producing lead, and the stuff drawn from this drive is the richest we have yet produced. The 45 yard level east is progressing more speedily as the ground has become somewhat easier. This end has much improved for lead and blende since my last, and I like the appearance of it very much; and anticipate having to report a further improvement next week. The stope in the 30 yard level, west of shaft, still produces 1 ton of lead per fathom.

**CARGOLLE.**—J. Jennings, Sept. 27: Doctor's Shaft: The lode in the 24, east of shaft, continues to produce good stones of silver lead, and strong water is issuing from the end. The 20 level east is still producing lead, and the stuff drawn from this drive is the richest we have yet produced. The 45 yard level east is progressing more speedily as the ground has become somewhat easier. This end has much improved for lead and blende since my last, and I like the appearance of it very much; and anticipate having to report a further improvement next week. The stope in the 30 yard level, west of shaft, still produces 1 ton of lead per fathom.

**CATHEDRAL.**—J. Mitchell, Sept. 25: The lode in the engine-shaft is improving both in size and appearance, being 3 ft. wide, 1 ft. of which is spotted throughout with grey ore, a very promising lode indeed. The lode in the rise in back of the 42 is getting wider, and letting out more water.

**CWM ELAN (New).**—W. Goldworthy, Sept. 22: The ends, stopes, and winze, are producing ore as per valuation forwarded to you on the 16th inst., with the exception of the stope in the 30, east and west of shaft, which have improved. Dressing and lead ore still satisfactory.

**CWMYSTWITH.**—Sept. 27: The lode in the level west is small and poor. In the level east, on the new lode, the lode in the end is disordered by cross joints, at the same time showing spots of ore, but not sufficient to value. In the 12 east, on the new lode, the lode is still worth 10 cwt. of lead ore per fathom. In the 10 east, on the new lode, the lode is 3 ft. wide, producing saving work for dressing. No alteration worthy of remark in either of the cross-cuts, stopes, or tribute pitches since last reported. Fair progress in dressing and lead ore still satisfactory. We shall sample on Friday next (29th inst.), about 12 tons of silver lead of very good quality.

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cross-cut, to drive east of engine-shaft, by six men, at 5s. per fathom; we have not as yet met with the east lode in this cross-cut, but are continually meeting with branches containing a little lead, which leads us to believe that the lode is still ahead of us. The 160, to drive south of engine shaft, by four men, at 8s. per fathom; lode of a very promising character, and producing good stones of lead ore. The 100, to drive north of engine shaft, on the east lode, by two men, at 2s. per fathom; we are occasionally meeting with good stones of lead ore in the kellas, and have about 6 feet more to drive to get to the end of the old workings. The 72, to drive south of west cross-cut, north of boundary rise, by four men, at 4s. 10s. per fathom; lode producing 6 cwt. of lead ore per fathom. We are of opinion that this lode is standing to the west of our present workings at the 60, and to prove this point have set, to two men, to drive west at 4s. 10s. per fathom. To strip outside of level between the 72 and 60, north of boundary rise, by four men, for 8s.; lode producing 10 cwt. of lead ore per fathom. When this is completed, we shall set to stop the back in a lode producing 10 cwt. of lead ore per fm. The 60, to drive north of boundary rise, by four men, at 5s. per fm.; lode producing a little lead. No. 1 stope, in back of this level, by four men, at 3s. per fathom; lode producing 6 cwt. of lead ore per fathom. No. 2 stope, by two men, at 3s. per fathom; lode producing 6 cwt. of lead ore per fathom. We have six tribute pitches working by 14 men at 8s. per ton for lead ore. We are engaged in making alterations in our dressing department by fixing improved jiggers, which will enable us to treat a larger quantity of stuff, and commence operations on the halvaus. Machinery and pitwork in good working order.

**GAWTON COPPER.**—George Rowe, George Rowe, jun., Sept. 23: The lode in the winze sinking below the 117, is producing very strong mudstone, with good stones of ore. The lode in the stope in the back of the 117 is worth 10s. per fm. The lode in the 105 east is 4 ft. wide, producing good stones of ore. The lode in the rise in the back of the 105 is worth 12s. per fathom. The stope in the bottom of the 95 is worth 12s. per fathom. The lode in the winze sinking below the 95 is worth 6s. per fathom. The part of the lode carried in the 82 east is 6 ft. wide, of a very kindly appearance, producing arsenical mudstone, with good stones of ore. The tribute department is without change.

**GLYN.**—James Roach, Sept. 25: We are getting on with sinking shaft for bearers and chisels, and all other preparatory work. A new obstacle to prevent us reaching the new level in about the time anticipated. In the 28 east we have strong indications of being near a good deposit of lead. In the same level west we have every reason to expect something good in a short time. Forebrest now 15 fms. behind the winze sunk under the 15.

**GOGINAN AND LEVEL NEWYDD.**—Sept. 26: We have this morning got a borer hole through from the 120 fm. level, west of cross-cut from Bryn Pica shaft to the 130 fm. level going east of the winze below the 130 fm. level, 35 fms. 2 ft. 6 in. The lode is 1 ft. 6 in. wide, and is of a very promising character. We shall commence driving the 120 west of said winze, where we hope to open out some good ore ground, and shall also make preparations for sinking Bryn Pica shaft below the 120, where we have to fix lifts, cut flats, &c. In the 120, east of western shaft, the lode is large, and the portion carried is disseminated throughout with lead ore, producing very good saving work, and the same remark may be applied to the same level driving west of winze below the 110 west, 80 fms. west of Bryn Pica shaft. We hope to effect a communication between these two points in about a month. 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Richmond, 9 $\frac{1}{2}$  to 10; the usual telegram gives the week.



**COLLIERIES.**—The general improvement in the coal and iron trades throughout the country is maintained, and better reports are coming from all the chief centres of these industries. The effects of the failures of those concerns which have been unable to tide over the depression in trade are now passing away, and the condition of these districts which have suffered most from these influences is now considered to be commercially sounder and more encouraging than for many months past. As regards the price of iron, there has been a decided advance, and the demand for iron, especially for good qualities, and prices are stiffer. There is also a demand for coal. At Newcastle the shipments of coal, though large, are falling; and, as regards the iron trade, there are strong symptoms of an early revival. At Stoke the improvement in the demand for pig iron continues, and the price in prices is noticeable. In South Staffordshire coal is in great request for the purpose of ironing well; at Mid-Leathbury stocks are decreasing, and trade improving. Yorkshire is sending more coal to London. In fact, which ever way we have still here the same report of the worst having passed, and the tide of recovery having turned. Having, therefore, nothing but bright prospects for the future, those who care for colliery shares as an investment should at once turn

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## Notices to Correspondents.

\* Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be filed on receipt; it then forms an accumulating useful work of reference.

We are compelled to postpone the publication of the paper on the Iron Mine of Mokta el-Hadid, in Algeria, until next week's Journal.

SHARE DEALING.—We never interfere in the sale or purchase of shares; neither do we recommend any particular mine for investment or speculation, or broker through whom business should be transacted. The addresses of most of the latter appear in our advertising columns.

Received.—"R. P. R." (New York): Letter, but not parcel—that will be very acceptable.—"S. N."—J. C. J.—"E. F."—D. Roberts (Georgetown, Colorado): The samples have not yet been received.—"A Shareholder" wishes to know "what has become of the General Brazilian Mining Company's affairs?"—"C. M."—"W. T." (Ballydeobol): "Engineer" (the Nascent Process)—Henry Sewell (Valparaiso): Next week—John Roberts (Pen-y-Groes): Next week—"Experientia Docet"—"A Cornishman"—"Shareholder in many Mines."

## THE MINING JOURNAL.

Railway and Commercial Gazette.

LONDON, SEPTEMBER 30, 1876.

## IRON AND STEEL INSTITUTE'S MEETING.

If there were any lingering doubts left in the minds of those who guide the industrial affairs of England as to the practical utility of the Iron and Steel Institute, they must have been dissipated and entirely removed by a perusal of the proceedings of that association on the occasion of its eighth annual provincial meeting, held last week at Leeds. It has been laid to the charge of that Institute that its existence was simply an excuse for an annual summer excursion, and nothing more, and that the utility of the provincial meetings was mainly to be found in the scope which they afforded for feeding and being fed. It is quite true that the Institute is not *sans reproche* in this matter. But that is due to the accident of the hospitality that has always been accorded to it by those who undertook the formidable task of its reception, and not to any inherent weakness in the Institute itself, nor to the *malice prepense* of its founders or executive. Along with an amount of recreative enjoyment that few kindred and contemporary institutions can command, the Institute year by year is increasing the scope of its efficiency and the value of its work, and the meeting held last week at Leeds was in these qualities quite abreast of any of its predecessors. With a membership now closely approaching a thousand, and a prestige second only to that enjoyed by the British Association itself, it is becoming more and more difficult to receive and entertain the Iron and Steel Institute in a manner worthy of its rank and its antecedents; and this difficulty has been all the more felt in this country since the almost regal reception accorded to those who visited Liege in the autumn of 1873. Barrow followed suit in 1874 in a manner worthy of its dual resources, and Manchester last year made provision that could not be despised. But the tax upon the resources of the local reception committee was evidently growing too great as the magnitude of the membership increased, and the counsel wisely determined that this year there should be less display, if possible, on a public scale, and that the members of the local reception committee should each in his own way, and within the limits of his own private resources, entertain the members of the Institute at his own "mahogany," and we believe that if the new arrangement has not succeeded so far as its authors intended, in relieving the entertainers from the *onus* and cost of their arduous duties, it has at any rate been found more congenial to the entertained, enabling them to make more intimate friendships than could otherwise be arranged, and probably also promoting the mutual interests of host and guest, by eliciting points of possible contact and reciprocal connection alike valuable and gratifying.

It is a difficult matter at all times to estimate the full potential effects of the deliberations of a body like the Iron and Steel Institute. It is not only that these meetings bring together an amount of cumulative wisdom and experience not otherwise practicable, enabling the chemist to compare notes with the manufacturer, the manufacturer with the merchant, and so on, but it leads men to think of possibilities that would not, but for the disturbance of some latent idea and quiescent faculty in the course of observations made for the first time, have been thought of. The papers selected for discussion at Leeds were all of a thoroughly practical character, and here we may observe it must have occurred to our readers that it is in the essentially practical turn of their proceedings—the experimental and realistic data on which its members insist—that the Iron and Steel Institute chiefly differs from its more distinguished contemporary the British Association, which often undertakes the treatment of subjects that are alike recondite and occult, unpractical and impracticable. The reading of Professor GREEN'S paper, for example, on the "Geology of the neighbourhood of Leeds" did not promise any "new revelation" on the face of it, but apart from the data which it supplied as to the interesting geological features of the South and West Riding of Yorkshire it drew from Mr. J. T. Smith, of Barrow, the highly important fact that in the Barnsley district a new coal field of 15,000 acres in extent, and having four different seams of coal of the average aggregate depth of 20 feet, had recently been discovered. This is a discovery made within the last two years, and mainly in consequence of the borings undertaken by the Barrow Hematite Iron and Steel Company. In regard to its commercial and industrial results the discovery is of the highest importance, but it is still more important as pointing to the qualifications and reserve with which all estimates as to the extent and duration of our coal fields must be accepted, seeing that "day unto day uttereth speech" on our coal resources, which greatly modifies and alters our antecedent knowledge on this matter.

The paper read by Mr. G. DOVE, jun., on the "Frodingham Iron Field" was remarkable only for the hopeful way in which it spoke of the position and prospects of the district. The writer's conclusions were in the main borne out by Mr. ADAMSON, of the Hyde Engineering Works, Manchester, who, however, looked certain difficulties and drawbacks squarely in the face, and candidly acknowledged that with these yet to conquer or remove Lincolnshire could not make a premier position. A long discussion that followed the reading of Mr. DOVE'S paper took a somewhat amusing turn when Mr. ADAMSON declared that he had not been able to meet the requirements which he had laid down as needful for the success of the Lancashire iron trade because of the unsatisfactory behaviour of Mr. WINN, the lessor of the ironstone, who supplied it in such a very arbitrary way that Mr. ADAMSON concluded "the earth was the Lord's and the fulness thereof," except what belonged to Mr. ROWLAND WINN, of Frodingham. A number of the members visited the Lancashire district on Friday, and saw for themselves the resources of the district. They were hospitably entertained by Mr. ADAMSON, Mr. ROSEBY, and others, but it was hardly considered in good taste that after the grievance, evidently keenly alive between the lessor and the lessees of the ironstone, the health of Mr. ROWLAND WINN should be proposed in as glowing terms as if it was a matter of course that they should be endorsed by everyone present, whereas the remarks made by Mr. ADAMSON and Mr. CLAY tended to quite a different conclusion. Apart from this, however, it is indisputable that both the discussion upon and the visit to Lincolnshire led to the impression that in the out of the way district, of which Frodingham is the centre, there are great possibilities of industrial development. Passing over some of the papers that had a purely mechanical interest, and noticing by the way that the excellent paper of Mr. JONES on "Technical Education in Connection with the Iron Trade" is likely to bear good fruit in diverting from metropolitan to provincial institutions a portion of the funds available for science education, we come to the discussion on the manufacture of steel direct from the ore—a subject introduced by Mr. G. J. SNEELUS, of Workington, who has been experimenting with this

process since the visit of the Iron and Steel Institute to the West Cumberland Works in 1874. Mr. SNEELUS, Mr. J. T. SMITH, of Barrow; Mr. E. W. RICHARDS, and Mr. MENELAUS—four of the most practical and experienced men in the trade—all bore testimony to the economical results of the manufacture of Bessemer steel by running the molten iron direct from the blast-furnace instead of re-melting it in a cupola between these two stages, and for all practical purposes it may be assumed that the new mode of manufacturing steel will henceforth be practised in lieu of the old, with not only a considerable saving in cost but with a real improvement in quality, because of the greater care taken with the initial operations at the blast-furnaces.

The paper read by Mr. HENRY KIRK, "On the Puddling Process," induced a discussion on the vexed subject of mechanical puddling, the most valuable feature of which was the testimony borne by Mr. HEATH, M.P., to the continued efficiency of the Danks process at the Ravensdale Works, in North Staffordshire. It is evident that, in spite of the many failures and discouragements encountered in the solution of this problem, practical men do not yet regard it as insoluble—nay, that the most experienced regard its solution as near at hand. The concluding paper of the session—that "On the Utilisation of Slag for the purposes of making Glass"—established the fact that glass could be produced from slag by an intermixture with other chemicals at a cost that would defy the competition of glass made by the present system. It is, of course, very doubtful whether it would suit the convenience of ironmasters to have glass-works erected in the immediate neighbourhood of their puddling furnaces; but, if this drawback can be overcome, we need not hesitate to anticipate the time when a very large part of the huge mountains of slag accumulated in the neighbourhood of ironworks will be applied to this important manufacture.

Upon a survey of the whole proceedings of last week, we are disposed to believe that no more important meeting of the Iron and Steel Institute has ever been held, reviewed in the light of its utilitarianism and practical value; and we do not doubt that the stones which were set a rolling in the course of the discussions, on which we have here only very slightly touched, will not cease to move until they have overturned many old prejudices, and uprooted many noxious ideas and practices subversive of that shout of progress which it is the aim and the glory of the Iron and Steel Institute to foster and promote.

## MACHINERY IN IRONMAKING.

A question of the last importance to everyone practically engaged in the iron trade was advanced at the recent meeting of the Iron and Steel Institute in Leeds. The progress of the steel question has recently been rapid, and it will soon receive considerable impetus from the withdrawal by the Government of restrictions relating to its use in certain engineering purposes, even as they have been virtually withdrawn respecting its application to leading marine work. But, however rapid may be the future progress of the steel movement, it will not prevent the necessity for attention to be closely given to the most effective method of producing good finished iron. In proportion, indeed, to the increased use of steel will be the demand for reliable iron produced in the puddling-furnace. No one can be content with the old hand furnace; its capacity is much within modern requirement, its action is irregular, and it needs for its operation an amount of manual labour which every year becomes increasingly scarce. With our subsisting very limited demand for iron we may be able to huddle on with the extent of manual labour available to us; but, no sooner will a revival in trade have begun to appear than we shall find ourselves under-handed, notwithstanding that the permanent laying off of some iron rail mills may have set many puddlers at liberty. Already the men so liberated are being absorbed into other industries, and it is questionable if many of them will ever return to puddling; for the spirit of the times is against the employment of human toil in exhausting work, notwithstanding that it is not always easy to induce the men whose severer labour would be supplanted to conclude that their interest consists in encouraging the desired revolution. And the young people who are being trained to become puddlers were never so few in any of the ironmaking centres. On the ground of labour alone, therefore, this question presses for solution, but the question of quality is hardly less significant.

The Iron and Steel Institute were happy in having the whole question brought lucidly before them by a man who understands it thoroughly, and who is, moreover, well able to formulate his knowledge in perspicuous language. Mr. H. KIRK, of Workington, who read the paper upon "Puddling in Ordinary and Rotary Furnaces," has before exemplified all this, and his effort at Leeds has only increased the obligation of ironmasters to him for the benefit which, in keeping this theme well before them, he is rendering their industry. Happily men of long practical experience and of acknowledged scientific and mechanical attainments continue their efforts to make the best of the schemes for limiting the amount of manual labour required, and at the same time to bring about uniformity and better quality. When, therefore, Mr. KIRK re-opened the subject with the paper named the author's views and opinions had shed upon them the greater light which resulted from these men's labours. That recent experiments have not been in vain is conclusive from what Mr. GILKES (HOPKINS, GILKES, and Co., Middlesbrough), Mr. J. HEAD (Middlesbrough), and Mr. R. HEATH, M.P. (Stoke-upon-Trent), told the meeting. All these gentlemen, and especially Mr. HEATH, have been fairly successful, and it cannot be said that the experience of Mr. BRIGGS (Middlesbrough) is without hopeful features. Of all the users of rotary puddling machines we need hardly say that Mr. HEATH has been the most successful. This is the more satisfactory inasmuch as he tells us that he has not from the beginning made any alteration in the furnaces from the time it was put down. In this case the furnace was the Danks, and he says that by its use he made a better boiler-plate than he could turn out with the aid of the old hand furnace, and before prices fell to so unprofitable a level made such plates at a satisfactory profit. Mr. GILKES did not seem to have been so happy in his experience as to the mechanism of the furnace as Mr. HEATH had been; but whatever the extent, or however originating, those difficulties had now been overcome, and if Mr. HEATH has made excellent boiler-plates with the Danks puddling-machine, Messrs. HOPKINS, GILKES, and Co. are now producing "homogeneous rails which he would not like to say were equal to steel, but he would not like to say anything short of it." Mr. GILKES is very bold; he goes the length of saying that not only was the iron produced in the rotary puddler superior to that produced by ordinary puddling, but his firm, he said, "had found that they could produce a class of iron near akin to steel, if not steel," and he added that "out of that would come a class of rail iron superior to steel." His firm had, he concluded, "attained an entire success with the Danks furnace."

Such information affords us the utmost satisfaction. Nevertheless we cannot but think that this success is hardly so complete as could be desired. The excellent reports which we here epitomise should be accompanied with the intimation that it is attained at a cost which makes the employment of rotary puddling commercially profitable only when the market prices of finished iron are higher than they are now. Upon this very important point Mr. HEATH is frank. He says that though his firm was enabled by a Danks puddler to produce "a most excellent quality of boiler-plate, satisfactory in every respect, yet if they asked him whether it was calculated to puddle iron to make rails at the present price he should say 'certainly not,' but he could produce iron which would bring a very high price, and leave him a very satisfactory profit." If, however, Mr. HEATH cannot work his Danks plant to make common rails at current rates, he is equally satisfied that there is no form of puddler by which such rails can be made at a profit at prevailing quotations. We, nevertheless, urge that the want of the iron trade is a puddling machine, which, whilst it fulfils the other requisites earlier specified, shall also make iron at a rate at least equally low with the cost of producing iron by the ordinary hand furnace, investment of capital and all other circumstances considered. We are not quite certain that the working of the plant at the Ravensdale Works do not justify this expectation. What, how-

ever, is needed is that to which Mr. KIRK's paper points—joint and combined experiments, with the view of overcoming, not for an individual firm alone, but for the whole trade, every difficulty which may have occurred to separate experimenters. Now is unquestionably the time to engage in such combined experiments, but we fear that we shall have to wait for them till the need presses more heavily than at the present moment. Meanwhile it is encouraging to be able to point to the success which independent firms have attained by mechanical puddling in two very important branches of the finished iron industry.

## THE TRADES' UNION CONGRESS.

The working men's Parliament has just terminated its annual session at Newcastle-upon-Tyne. For over a week the delegates representing the great bulk of the operatives of this country have been occupied in solemn conclave in discussing those great and important problems which not only affect their own interests but the whole commercial relationship of the kingdom, and a satisfactory solution of which would, unquestionably, be a most appreciable benefit to all. The very voluminous report of what is termed the "Parliamentary Committee," which was read at the first day's sitting, referred, amongst other matters, to the Trades' Union Act, the Employers' Compensation Act, Merchant Shipping Legislation, the Summary Jurisdiction of Magistrates, the Jury Laws, the Patent Laws, the Workshops and Factory Acts, co-operation, and also the causes of the present commercial depression. No one, we presume, will deny that these trade representatives have the most perfect right to meet in congress for the discussion of these important questions, and others of cognate character, though we may well question the ability of some of the delegates to grapple with the subjects under review, and dispute the conclusions at which they arrive. Many of the questions alluded to in the programme of the Trades Union "Parliamentary Committee" have long since engaged the serious and earnest attention of some of the leading men in the kingdom, and have puzzled some of the most astute social and political reformers, and it is scarcely likely that they will receive any satisfactory solution from any number of delegates viewing these questions from their own stand-point, and who appear utterly oblivious of every other consideration but their own pecuniary interests.

From a perusal of the Parliamentary Committee's report of this Congress, and the discussions which have taken place during the sitting, one thing is most evident—the delegates most fully believe in the potentiality of the voice of the people. *For populi, vox Dei* is evidently their rallying cry, and under this inspiration they speak and act, and denounce in no measured terms those who cannot see eye to eye with them, and refuse to recognise the soundness of their reasonings and the correctness of their deductions and conclusions. This, however, is not the way to succeed, and the delegates of the working men should understand that there are other considerations besides their own which should have due weight and attention; and if they would make more real progress in the solution of the complex problems which they have prominently placed in their programme, they must pay some regard to the claims of the employers of labour, and of large manufacturers, upon whom, after all, they have so largely to depend. We have repeatedly entered in these columns that the interests of both workman and employer are identical, and can never be separated; and it is only upon this understanding that the interests of either can prosper. We cannot, therefore, denounce in too strong terms the selfish views implied in this Trades Union Congress, to the effect that the working classes have an interest altogether distinct and separate from their fellow-men, which views, emanating from the leaders of the men, can only widen the breach which, unfortunately, has hitherto existed, but which we had hoped was now in a fair way of being healed.

Our space would altogether prevent us entering at any length into the many and vexed questions brought under discussion at the Congress, or parliament of the working men. We can only notice them. For a wonder the committee actually express satisfaction, or rather say they have not much to complain of, in reference to the operations of the Trades' Union laws. Now, for a committee whose sole object, or apparent sole object, is to find fault and grumble, this is certainly as much as can be expected. The employers' compensation for accidents, the next question in the official programme, has two sides from which it should be regarded. For our own part we can never see the justice of making any employer responsible for accidents which may occur in his manufactory, workshop, or colliery, when he has provided every means in his power to prevent casualties, and adopted every known scientific and mechanical means to avoid explosions, and to which accident and explosion the workman himself probably directly contributed by his own ignorance or culpable neglect. Greater responsibility thrown upon employers than already exist would be productive of most serious consequences, as it could only lead to greater recklessness on the part of workmen, and consequently to a large increase of accidents. The committee's report contained little of importance upon these next questions of the programme—the jury laws, the patent laws, and co-operation. A demand, however, is made for the extension of the restrictions which govern our factories and workshops, more especially to the employment of women and children. And here the same restrictive policy which characterises their other discussion steps in—no regard is had to the interests of the employer or manufacturer—the value and cheapness of female and youthful labour is entirely ignored, and the necessities and exigencies of the family which too often prompt this labour is set at naught. The Union Congress would make an inflexible law which, like that of the Medes and Persians of old, never altered, no matter what attendant causes or circumstances prevailed. The question of the jurisdiction of magistrates at courts of petty sessions also came in for discussion at the Congress, but the answer which the Chancellor of the Exchequer gave to a deputation which waited upon him some time previously in reference to this important question is conclusive proof that there is but little, if any, cause of complaint. Upwards of 620,000 summary judgments had been given in a year, and out of that immense number only 107 appeals had been made, and of these 21 were against publicans and 51 against bastardy orders, so that only 35 were of an unascertained nature. "The all-iniquitous statute of monopolies" in the patent laws are protested against, and we are told that "nearly the whole of the inventions are the product of the artisan class;" but having regard to other statements which have been so recklessly made we shall certainly require some further proof than the mere *ipse dixit* of the committee before we accept this assertion as correct.

But it is the causes which have led to the present depression in the trade and industries of the country which formed the principal features in the presidential address, and the chief topic of discussion in the Congress. This is a question legitimately within the province of the Congress, and is a point upon which every man in the country is most deeply interested. Unfortunately for the Congress, however, its parliamentary session is held under adverse circumstances—that is to say, they have to face and admit the fact that trade is still exceedingly dull in all the great centres of industry, and such being the case wages are low. Whatever may be the ostensible objects which the Trades Union has in view, its chief aim is to keep up the wages of the working classes. To this end everything else is subservient, and every effort of the leaders is directed. This is perfectly fair and right, provided honourable means are adopted, and attention paid to the varied causes which should regulate the labour market. The causes of the present commercial depression were stated to be three-fold—the increased cost of production of the raw material, the long period of inflation and over production, and the keen rivalry of foreign competitors. Whatever the causes, would it not have been better for the delegates assembled in their annual Congress to have accepted the present depression of trade as a fact which cannot be ignored, and have sought either to bring about a remedy or to counsel a submission to a lower rate of wages, which is inevitable? Any attempt to fix a standard rate of wages is as idle and useless as to try to rule the ebb and flow of the tide. Prosperous times mean high wages, and bad and depressed times mean low wages, and no sophistry on the part of the most eloquently-tongued trade agitator can gainsay it. The richest and



most powerful Trade Unions have always signally failed in their attempt to maintain a high wage rate in the face of falling markets; in fact, they are able to hold their own status in days of depression and stagnation. Trades Unions are only flourishing in the face of general prosperity—when depression sets in there is a large measure of general prosperity, and the obvious duty and interest of the Union is, therefore, to do all in their power to help to bring about more prosperous times, and to submit to lower wages when it is well known that two opposite plans have been proposed by employers to bring about a better state of things than now exists, and that with the least possible inconvenience to the working classes. Some employers would shorten the hours of labour, whilst others would extend them. The first class of employers knows that there is a superabundance of stock on hand, and, therefore, would lessen the production. The second class of employers have markets for their goods, but the cost of production is too great to enable them to successfully compete with foreign producers, and would, therefore, extend the hours of labour, and, consequently, produce more goods for the same figure. With a policy of indifference to old laws and regulations, however, the plans suggested by the employers are denounced by the Trades Unionists, who counsel that a bold front should be made by the working classes against these movements as having reactionary tendency. Surely, when it is thus taught that there is no possibility of a satisfactory solution of the problem which, of all things, it is most advisable should be definitely settled. We are sorry the delegates assembled in Congress spent so many hours, and such an amount of eloquence, from which so little practical good will result. If they had inculcated the value and necessity of mutual relationship between master and man, the necessity of submitting to a lower rate of wages in times of depression and stagnation, of being content with what they can get rather than what they would like, then they would have earned the good will and respect, if not, indeed, the gratitude, of both operative and master. If, too, they had paid more attention to their own legitimate functions—the amelioration of the condition of the working classes—the regulation and management of friendly societies, and other subjects of a like tendency—what a vast amount of good might have been accomplished. It is to be considered that there are far higher questions affecting the welfare of the working classes than mere agitation for increased wages. There are great social problems lying but little below the surface, demanding serious attention. Questions affecting the education, the practical and technical education—of the operatives, the intellectual, social, and intellectual elevation of the toiling millions demand serious consideration; for in proportion as this education advances will the material prosperity of the country be promoted, and the condition and welfare of every class strengthened and improved.

PIG-IRON IN THE UNITED STATES.

American statistics substantially confirm English figures as to the remarkable decline which has occurred in the demand for European pig-iron among the Americans. Thus we learn from some American returns that while 247,523 tons of pig were imported into the United States in 1872, the corresponding imports in 1875 sunk to 53,748 tons; an even as regards this reduced total it should be observed that a considerable proportion of it was speigleisen to be used in the manufacture of steel. Even speigleisen, again, begins to be replaced in the United States, so that as regards the great Transatlantic Republic its exportation will soon cease to be a source of profit to Germany. This it was computed that last year the United States produced nearly 8000 tons of excellent speigleisen; and this year this total is expected to be nearly doubled. It may be interesting to note the cost of producing a ton of pig-iron in the United States. Taking a general view of matters as they stood in 1875 the cost price of each ton of American pig-iron was estimated as follows:—Minerals, \$10.82; fuel, \$7.20; castings, \$6.00; labour, \$2.57; interest on capital, \$1.62; general expenses, \$1.60; making a total of \$25.11 currency, or nearly 41.10s. per ton. English money—say, 41.9s. 6d. per ton. This total was somewhat above the corresponding average of the 35 years ending with 1873 inclusive, but it was much below the corresponding cost of 1873. During the quarter of a century ending with 1873 inclusive, American pig-iron was made with the greatest cheapness in 1831, and under the least favourable conditions as regards the cost in 1873. Taking the average cost price of 1875 as the basis of comparison upon the subject, it would not appear, however, that a great deal was produced at a very decided profit in the United States in 1875. On the other hand, the heavy import duty imposed upon European pig entering the United States—a duty of no less than 3s. per ton—deprived European shippers last year of any possibility of realising any profit, more especially as European pig imported for consumption by the Americans has to sustain expenses of transport, brokerage, commission, &c. Of the pig produced in the United States last year Pennsylvania made 42½ per cent.; Ohio, 18½ per cent.; New York, 11½ per cent.; Michigan, 5 per cent.; while no other State attained a total of 3 per cent. The production of pig in the United States has exhibited a very great—in fact, an enormous—increase during the last few years. In 1810 only 54,000 tons of pig were made by the Americans; in 1830, the total had grown to 165,000 tons, and in 1840 to 315,000 tons. Since 1840 the production has grown in an accelerated ratio. In 1850 it had risen to 247,523 tons, and in 1860 it had further expanded to 919,770 tons. In 1870 an aggregate of 1,865,000 tons was attained. We have now arrived at quite modern times, even for this restless, rapid age; but may be well recapitulate the production and consumption of pig in the United States during the five years ending with 1875 inclusive. This information is afforded in the annexed table:—

Year.	Production.	Consumption.
1871	1,911,000	2,154,313
1872	2,554,558	3,149,043
1873	2,868,278	3,012,883
1874	2,689,413	2,734,589
1875	2,366,581	2,324,300

The consumption, of course, felt the shock of the great panic which has been in the American commercial world in the autumn of 1873, in consequence of the reckless establishment of "premature" American railways; but it will be seen that the margin between the production and consumption of pig by the Americans has been much reduced during the last five years—in other words, that they have become much more independent than formerly of external supplies of pig-iron. The difference existing in 1875 between the production and the consumption of pig-iron in the United States was, in fact, so slight that the Americans may now for all practical purposes be said to supply their own pig-iron requirements. At present, the blast-furnaces of the United States were fully employed, they produced, according to a careful estimate made upon the subject, no less than 5,439,000 tons of pig annually.

COAL AND IRON IN THE UNITED STATES.—There are some indications of a revival in the iron trade of Pennsylvania. Stimulated by a recent decline in coal holders are looking forward to the early start with a good deal of confidence. Cheap money and low cost of construction will also, it is believed, revive the work of building roads. The coal lands of the Central Railroad of New Jersey comprise 24,770 acres. There are on these properties 37 slopes and shafts, making 50 openings in all, which supply 29 breakers. The present capacity of production is 4,000,000 tons, which can be increased largely whenever the market demands. The Boston and Albany Railroad Company recently took off a set of steel car wheels and had run 523,000 miles. The total production of anthracite in Pennsylvania to Sept. 2 this year amounted to 10,635,145 tons, as compared with 12,327,467 tons in the corresponding period of 1875, showing a decrease of 1,612,292 tons this year. The total production of bituminous coal in Pennsylvania to Sept. 2 this year amounted to 2,343,479 tons, as compared with 2,454,542 tons in the corresponding period of 1875, showing a decrease of 111,063 tons this year. The demand for foreign coal at Boston has been confined

to retail lots. The enquiry for anthracite coal at Boston has been steady; consumers are stocking up for winter at reduced prices.

THE PHILADELPHIA EXHIBITION.—The prizes awarded at the Centennial Exhibition were made known on Wednesday. Amongst the successful exhibitors are—The Besbrook Granite Works, Ireland; the West Cumberland Iron and Steel Company, England; Working-ton and Bessemer pig-iron and steel products, the Phosphor-Bronze Company, London; Crosse and Blackwell, London; Thos. Bullivant, London, for sash windows; Cox and Sons, London, for furniture; Doulton and Watts, London, for mantelpieces; Fredericks Smelting Works, Germany; Job Adam Schindler, Solenhofen, Bavaria, for lithographic stones; Frederick Thomas, Siegen, Prussia, for crystal models; Renard Laprine, Epernay, France, for machinery for wine purposes; the Mechanical Net Weaving Stock Company, Germany, for linen and cotton; Mennier and Company, Paris, for linen fabrics; August Gerwig, Germany, for gold jewellery. Medals and diplomas have been granted to the following firms—Jones, Meyer, and Colver, Sheffield, for crucible steel for tools; MacDonald, Field, and Co., Aberdeen, for granite monuments; W. D. Houghton, Warrington, steel wire and wire work; Kay and Hilton, Liverpool, for millstones; Jas. Hunter, Aberdeen, for granite monuments the Great North of Scotland Granite Company; Hawksworth, Ellison, and Co., England, for steel.—4000 awards are still to be approved by the Commission.

NICKEL IN SPAIN.—M. Meissonier, the Inspector-General of Mines to the French Government, has called the attention of the Academie to the existence in Spain of a nickel ore similar to that of New Caledonia. The deposit is situated in the province of Malaga, and has already produced some hundred tons of ore. Analyses made at the School of Mines proved that it contains from 8 to 10 per cent. of metal—that is to say, a little less than the samples from New Caledonia. It contains, however, no trace of cobalt.

LITTLEDEAN WOODSIDE COAL COMPANY (near Newnham, Gloucestershire).—The directors of this company wish, through the Journal, to give notice to the shareholders that they have now won the coal in the deep level, for which they have been sinking and driving the last 18 months. The directors are pleased to state the seam is of excellent quality, and from its hardness suitable for household purposes. The opening out will be pushed on with all speed.

IRISH GRANITE FOR ENGLAND.—Immense blocks of granite—some of them about 7 ft. square, and weighing 7 tons each—are now being shipped at Newry by the Besbrook Granite Company, for Manchester. These are the largest blocks ever shipped from Ireland. Last year the company shipped stones 22 ft. long to England.

REPORT FROM CORNWALL.

Sept. 28.—There certainly never were times less fruitful in matters of comment than the present, and this week is the most barren of all. However, if barren of present news, it certainly is productive of hope, for the improved feeling which we remarked upon last week has been strengthened this by the result of the Banca sale, and the advance in copper. Moreover, the reports from Australia, which appear to point to the rapidly approaching exhaustion of the richer stream deposits, are also full of encouragement. The Red River has come up for discussion again, and an attempt made to show that the 9000 frames and boulders thereon are producing profitable results. It may be so, but if so appearances are very deceitful. Profits may be made, but certainly not to the extent rumoured.

The Barrow borer at Dolcoath is made of gunmetal, which combines lightness and strength. A little while ago it was suggested that some of the new alloys might be utilised in the manufacture of boring machines, and now we hear that castings are being made of phosphor bronze for this purpose. In the long run this will greatly economise the cost of these machines, for phosphor bronze is as nearly indestructible as any metal or alloy that we possess. Doubt has been cast upon our statement that the Barrow borer is a success at Dolcoath, but whatever may be rumoured or hinted evidence and proof are all in one direction. We do not say that the Barrow borer is the only one adapted to the country, but it certainly is the first that has been proved to be.

A curious question with regard to the rateability of mines has been decided by the Camborne magistrates. Mr. Thomas Pryor, purser of West Wheel Seton, was summoned for refusing to pay a rate made on April 18 last on the returns of the mine. Mr. P. P. Smith, of Truro, watched the case on behalf of the mine, and Mr. L. L. Peters, clerk of the Assessment Committee, conducted the case for the overseers. During the latter part of the year 1874, the mine was in difficulties, and was almost compelled to cease working on account of the heavy influx of water, consequent on the stopping of an adjoining mine (Wheel Seton), and under these circumstances an appeal was made to the lord of the mine (Mr. G. L. Bassett) for a reduction of rates. On the representation of the case being laid before him, Mr. Bassett finally consented to give up dues to the extent of 2500l., on condition that the adventurers erected an engine on the western part of the mine to drain that portion of the sett. This condition was complied with, and on these grounds Mr. Smith contended that no dues were payable, and consequently the mine could not be rated. Mr. Peter argued that the gifts of 2500l. was simply a consideration for money expended, and not the remission of dues.—The Bench, after a short deliberation, stated that they were unanimously of opinion that the dues were not given up, and that the rates were payable.—An order was made for the payment.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Sept. 28.—Nail rods especially are just now firmer than they have been for some months past. The advance is not considerable, still as to that particular article it is specific, and ranges up to a maximum of 5s. This is due mainly to the bankruptcy of Mr. G. H. Hickman, who was one of the largest producers of nail-roads in South Staffordshire. It is doubtful whether or not the rise will be maintained, inasmuch as the nailmasters have very large stocks of nails lying unsold in their warehouses. At the same time the bulk of the makers of finished iron who do not demand standard prices are firmer in their quotations, and some of them decline to part with their iron at less than from 2s. 6d. to 5s. advance upon previous rates. These prices the merchants and manufacturers are reluctant to give, and those who have orders to place are holding off until makers will accept them on old terms. Only where old rates are being accepted has business this week been done in other than exceptional instances. As a rule the mills and forges have fewer orders before them now than a week ago. The merchants, however, who supply local manufacturers are in receipt of steady enquiries for iron to be used alike in the manufacturing and the rural districts, but in almost every case the orders represent only small quantities.

There is less disposition this week than last to buy pig-iron in advance of requirements. Mill and forge proprietors are disinclined to believe that the activity in the pig market will be sustained after the chief Northern of Europe orders have been got out. And this should be inferred from the experience of the finished iron makers themselves. The only large consumption of pigs now observable relates to the foundries at which heavy water and gas mains are turned out. At such places there is great briskness at the present moment, accompanied with a large consumption of foundry pigs. It is this foundry consumption which tends to strengthen quotations, combined with the considerable number of sales which a short time ago the leading hematite firms were able to book at the prices then current. Whatever may be occurring in steel making districts, in this where no large amount of steel is produced, the rise in hematites has had the effect of checking purchases. It is, nevertheless, doubtful if some classes of pigs made in this and surrounding districts are likely to be much lower than they are at present, since it is a fact that some of them are lower now than ever they were.

The Coal Trade is disquieted, first, out of the advance of 1s. per ton, recently declared in the Cannock Chase district, and next, out of the not very surprising course which the men about Dudley have taken. Seeing that the men in the Cannock Chase district are about to get a rise in wages the Staffordshire men proper are trying to induce the Coalmasters' Association to put up prices, so that their wages in the Thick coal seams may be advanced 6d., and in the Thin coal seams 3d. "per day." With that object they have memorialised the

Association, and Mr. E. Fisher Smith, the Chairman, has acknowledged it in the usual form, and has promised that the communication shall be duly considered. This, combined with an improved business in the coal sent from this district by railway, prevents any further ease in the coal market hereabouts, and makes it impossible for ironmasters to induce colliery proprietors to accept orders for forward delivery at present prices. The rise in the Cannock Chase district has not only not checked orders, but since the higher prices have ruled the demand has been greater, and there is more coal going away from the Chase now than for a long time past.

This afternoon there was a meeting of Cannock Chase colliery owners in Birmingham, to discuss a further rise in house coal. The leading firm is the Cannock Chase Colliery Company; Mr. Brown, their manager, was not, however, present at the meeting, and no definite action was resolved upon. The opinion upon "Change was that another advance will be declared, but the course which Earl Dudley will take will be determined next week.

The general manufacturing coal trade of North Staffordshire is not looking up. There is room to fear that the demand on that account may be largely stopped for a while, for the potters have determined to resist a reduction of 10 per cent. in their wages, for which their employers have given them notice. For some time past the potting trades have been depressed, and the demand for coal from that quarter only tame, nor has the falling off in that direction been made up for by greater activity at the ironworks, since these too have lately been doing but little. This week the new specifications received at the mills and forges have not greatly bettered the previous condition of things. Iron is still going somewhat freely to Liverpool, but the prices are distressingly low, though for the moment retrogression is arrested.

SALE OF SHARES.—At Messrs. Ludlow, Daniell, and Roberts' sale on Tuesday, Birmingham Banks were sold at 15l. 2s. 6d. per share; Birmingham Small Arms, 29l. 12s. 6d.; Mid-Cannock Colliery, 14l. 2s. 6d.; Cardiff and Swansea Smokeless Steam Coal Company, 2l. 5s.; and Hazel Grove and Calcot Hall Lead Mining Company, 4l. per share.

TRADE OF THE TYNE AND WEAR.

Sept. 28.—The shipments of coal have been large during the past week, there being a good demand for the Continent, and also coastwise. A considerable quantity of coal has also been shipped for France. There is no great change in quotations, but prices are certainly firmer. There is most demand for best and second class steam coal and house and gas coal. The shipments of gas coal are very active from the Tyne Dock and other points. The imports of Spanish iron ore are increasing to this district. The umpire in the case of the Durham miners has given his decision, which is to the effect that a reduction of six per cent. shall be made in the wages of underground men, and four per cent. in the wages of a small class of men employed on the surface. The surface enginemasters, firemen, mechanics, &c., are not included in this reduction. It was fully expected that the reduction would be ten per cent. at least. Six per cent. will not afford much relief to the Durham coalowners, and the stoppage of collieries will doubtless go on until the supply is brought down to the requirements of the trade.

An explosion of gas occurred at the Wheatley Hill Colliery, in South Durham, on Tuesday. As a large number of men are employed at those works much alarm was felt in the district, and it was some relief when it was ascertained that, although a very serious explosion had occurred, causing the loss of four lives, the great bulk of the men had escaped unhurt. Wheatley Hill Colliery was opened out only a few years ago, and it is connected with the old Thornley Colliery, the company being known as the Original Hartlepool Colliery Company. The manager is Mr. Philip Cooper, one of the most experienced and able practical coal miners of the district. The workings have been re-opened, and a thorough examination made by Mr. Bell, the Government Inspector, Mr. Cooper, the general manager, and other competent miners. The explosion, it appears, occurred in the leading airway drift, about 1100 yards from the working shaft. These drifts were broken at the point by small bitches or dikes. There were eleven men and boys in that small district, and they worked with naked lights. The whole of the mine has been examined and pronounced safe to work in every part, but the Inspector wishes the district where the explosion occurred to be worked with safety-lamps instead of candles.

There was a larger attendance at Middlesborough on Tuesday than was the case last week, and business was pretty well sustained, both as to enquiries for iron and as regards prices, which have lately been firmer. There is a strong and more regular enquiry for pig-iron, not only for shipment, but also for local and general consumption. The deliveries for Scotland are also larger. The stocks continue large, and even though the larger demand prevalent it is doubtful if they will show any reduction at the end of the present month when the returns are made. Taken on the whole, however, the aspect of trade is much more promising, as there is more enquiry coming in for finished iron. It is known that large rail orders are likely to be given out. Enquiries are floating about. Whether Cleveland ironmasters will be able to quote prices that will secure any of this work is somewhat doubtful. The plate makers to-day reported that they are receiving additional work, and the prices they ask were in advance of those recently ruling, 7l. to 7l. 5s. being the general quotation, though some firms not so well off for work are prepared to take somewhat less. Rails and bars are unchanged from late rates. The creditors of three of the firms which have lately failed have agreed to liquidate by arrangement. The closing quotations for pig iron were stronger than at the opening of the market. They were—No. 1, 42s. 6d.; No. 2, 42s.; No. 3, 42s.; No. 4, 42s. The coal and coke trades slack.

Many of the iron ore mines in Cleveland have been stopped, and the men are to follow, owing to the small demand for the ore, and large numbers of men are leaving for other districts and countries.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Sept. 28.—In the lead mining districts business has been of a steady character, without any new ventures. A good many small pits are standing, not having turned out profitable to those who commenced them. Speculation in this description of property has been very quiet for a long time, capitalists not appearing to have much faith in Derbyshire lead mines. The great run in the county has been with respect to the black diamonds, and even here all is not so glittering as it at one time appeared to be, and some heavy losses have been made, not the least being that of one at Stannard, which at one time was made to look so promising, and the miners were led to believe that they were going to be converted into colliery proprietors. Very little has transpired with respect to the efforts made to save the property from confiscation, but it is to be hoped that all will not be lost, for the vendors certainly had by a very long way the best of the bargain, and can well afford to be generous.

The Coal Trade just now is looking healthy, and some of the collieries are well supplied with orders. Household qualities are in most request, and a considerable tonnage is being sent to London by the Midland. Rapid progress is being made with the Great Northern line from Derby to Nottingham, so that the colliery owners along a great deal of the route will have the advantage of two lines of railway for the conveyance of their minerals. Steam coal is without alteration, and the same may be said with respect to engine fuel. A steady business is being done in pig-iron in some of the new markets, and in Staffordshire there has recently been a rise in the price of 1s. per ton. The Derbyshire pig takes very well there, a good deal being made of a mixture of Northamptonshire with the local ore, which produces a good class of iron.

With but few exceptions the Sheffield trades are still in a depressed state, without much prospect of improving. After a rather active period the armour plate mills have become quiet, whilst a moderate business only is being done in those for ships and boilers. A little more is being done in some descriptions of goods with America. Bessemer is still being extensively produced, and there is a good demand for rails for Russia and other countries, so that there is every appearance of makers having plenty to do up to the close of the year. File makers are better employed than they have been, and more is being done with some of our colonies in edge tools. The saw manufacturers are getting quieter, and there does not appear to be any change with respect to table or spring knife cutlery. The foundries are tolerably well off for business in most parts of South Yorkshire, a good deal of work being supplied by the colliery owners and builders. House coal is in better request, without any general increase in price, although in some few cases a slight advance has been obtained. The Great Northern has taken a full average tonnage to London and the South. Engine coal is not easy to dispose of, and the Lincsshire markets are not so good as they have been. As yet there has been no decline in our shipments of steam coal, but it is not expected that the Baltic ports will be open much longer.

The Oakwell Colliery, near Barnsley, which was flooded some time since, is now being cleared of the water, it being tapped by means of a drift.

At the Barnsley Town Hall, on Wednesday, a miner employed at the Edmonds Main Colliery, in default of paying a fine of 40s., was committed to Wakefield for two months for striking his lamp and opening it with a pick.

WHARNCLIFFE WOODMOOR COLLIERY COMPANY.—A few days since a meeting of the above company was held in Manchester, for the purpose of considering certain proposals made by the vendor. The colliery is situated about four miles from Barnsley, and has been standing for some time, no dividend as yet, it is said, having been paid. The seam of coal worked is only about 3 ft. thick, whilst the colliery was transferred to the company during the man, and when coal was about double the price it now is. At the meeting Mr. Latimer was called to the chair, and in opening the proceedings stated the position the company was in. He said that Mr. Willey, the vendor, had offered to relinquish to the company 850 of the shares at present held by him in the company, on the condition that the sum of 12,000l. be raised on debentures, and had further offered to reduce the number of his remaining shares by two-fifths on condition that all the other shareholders agreed to do the same. It was then proposed by Mr. Latimer, an assent being given by Mr. Hill, that Mr. Willey offer he accepted, and that each shareholder be requested to contribute towards the sum of 12,000l., in proportion to the shares held by him. The resolution was agreed to. It was then moved by Mr. Barlow, and seconded by Mr.



Lever "That the sum of 12,000, to be raised by debentures, repayable at the end of five years, bearing interest at the rate of 10 per cent. per annum, and that such debentures be offered in the first instance to the shareholders in proportion to the shares held by them in the company, but that the company have the option of repaying the money prior to the expiration of such terms of five years." The resolution on being put to the meeting was agreed to. A vote of thanks to the Chairman brought the proceedings to a close. As there is every probability that the 12,000, will be raised, it is expected that the colliery will be in working operation before long.

**WARNING TO COLLIERIES.**—The Sheffield Telegraph publishes the following warning, signed "W. F. Cooper, F.M.S.":—"During the last few days very great changes have taken place in the relative distribution of atmospheric pressure. A sudden rise of the barometer last week has been succeeded by as sudden a fall. On Sunday evening the mercury had fallen very low; on Monday it rose until 6 P.M. Since then it has gone steadily down, and the reading is now very low. The weather is broken and unsettled, the atmosphere is much disturbed, as indicated by the sudden backings of the wind, but pressure is now all over England. Colliers, underwriters, and all having the care of collieries, must now use care, and frequent examinations of the workings is recommended, as pressure has increased 7 lbs. on the square foot within the last two or three days, with an increase of gas in proportion. Roofs must be properly secured or falls will occur. Naked lights must not be allowed in any pit where gas is known or suspected to exist. Caution and frequent examinations when any gas is found in small quantities is advised, as a sudden inrush may occur at any time during a week to come."

#### REPORT FROM LANCASHIRE AND CHESHIRE.

Sept. 27.—The commencement of winter, for the cold season has unmistakably come in, has led to a decided improvement in the trade in coal for house purposes, and compared with a few weeks ago business is quite brisk. There is talk of an advance in prices at the commencement of the new quarter, but no formal announcement to that effect has yet been made. The rumour has, however, caused many producers to decline forward deliveries at current rates, though there is not yet much difficulty in obtaining supplies. Coal for gas making is in good demand, and there is some anxiety on the part of consumers who have not yet made contracts to have them completed. Colliery proprietors are, however, holding back, and are refusing offers at rates which a short time ago prevailed. The shipping trade remains very quiet; in coke trade is decidedly improved. Prices at the pits in the South-West Lancashire district are about thus:—Arley, 10s. to 11s. per ton; Pemberton, Four Feet, 8s. 6d. to 9s.; common coal, 8s. 6d. to 9s. 6d.; burg, 8s. 6d. to 9s.; slack, 3s. 6d. to 4s. 6d. per ton. There has been also a slight improvement in the Iron Trade, and for pig-iron especially there have been enquiries. The market is, however, still in a very unsatisfactory state, and stocks are accumulating.

On Friday afternoon the Prince and Princess Teano, of Italy, together with Lady Crawford and Balcarras, of Haigh Hall, Wigan, and a distinguished party, including Lady Lindsay, paid a visit to the Bolton Iron and Steel Works. The party arrived in Bolton by train from Wigan, and proceeded at once to the iron-rolling mill, where they were met by Mr. H. Sharp, Mr. J. Sharp, Mr. J. Skidmore (one of the managers), and Mr. Lythgoe, and conducted over the works. After witnessing the rolling and pressing of steel rails and other operations in the rolling shed and casting department, the visitors proceeded to view the Bessemer process of steel making. Suitable accommodation was provided for them on one side of the ground where the retorts are fixed, and from this position they had a splendid view of the process, which it is needless to describe. The effect was both impressive and delightful. The party expressed themselves well satisfied with all they had seen, and shortly after the Bessemer process had been concluded they returned to the cars in waiting, and drove off to the station.

#### REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

Sept. 28.—The position of the staple trades of this district remains comparatively unchanged, and when an improvement is to be noted it is impossible to say. The foreign demand for bars, which was stated last week to be slightly improving, has not maintained that improvement. To the South of Russia clearances have been again made, but to that country the quantities of iron sent are exceedingly small, and it is plain that the Russian demand, thanks to the protective policy of the Czar's Government, is following in the wake of Transatlantic requirements, which seem to have left this district, never to return. To Italy, Spain, and South America, clearances are also made. There is no change to note in pig iron. At the steelworks business is fairly active. Tin-plates are unchanged. The quarterly meeting of the trade will probably be held in the course of a few days, but it is exceedingly improbable that the present restrictions in market will be discontinued. I should rather expect to see the restriction increased. In the Coal Trade the shipments of steam coal, foreign, have been rather larger than usual, but prices remain stationary. There are indications of a slightly improved demand for house coal. Patent fuel unchanged.

The railway companies of this district have up to the present seemed to be about the only concerns which have not suffered materially from the depression which now overshadows so many branches of trade and commerce. The report of the South Wales Mineral Railway Company, presented at the ordinary general meeting, shows, however, that three more of the collieries on the line had been closed altogether since January, and, of course, this has had a disastrous effect upon the receipts. It was satisfactory, however, to state that their lessees, the Glyncoff Colliery Company, had put so much traffic on the line as not only to pay the interest on borrowed capital, but to reduce the suspense account by the sum of 225s. The balance at the capital account was stated to be 24,074s.

The directors of the Newport and South Wales Shipowners' Company, a concern which has recently been formed in this district, gave an interesting account of the Rosedale, the last vessel acquired by them, on Monday. Mr. H. Russell Evans, a director of the company, presided, and it was stated that about 20,000, worth of shares had been already subscribed for, one of the directors having taken 6000. It is confidently believed that when a revival in trade takes place the company will be enabled to pay good dividends. The establishment of the company is a step in the right direction, as Newport has been behindhand in matters of the sort, compared with her sister ports of the Channel.

The National Association of Miners contemplate forming Glamorganshire and Carmarthenshire into one union, and have appointed a deputation to visit the district. A delegate meeting will shortly be held at Aberdare, when the subject will be discussed, and the deputation will attend.

#### REPORT FROM THE FOREST OF DEAN.

Sept. 28.—Two events of local importance have occurred during the current month—in the first place, we had to record the pleasing fact of the cutting of the Cleford High Delf seam of coal at Hawkewell Colliery on Wednesday, Sept. 6, and now we have the pleasure of announcing to the public the occurrence of a similar event at Haywood Pit, which pleasurable circumstance took place on Sept. 22, though the seam was not proved until Monday, Sept. 25. The seam at Haywood—or, technically, we believe, Addis Hill—Colliery considerably varies in thickness, from 8 ft. to less than one third of that substance, though the heat of it is easily to be seen with much definiteness, because the proof of it is by far too limited to justify anything very peculiar in relation to that point. As at Hawkewell, so at Haywood, the coal is of excellent quality, although, in some respects, it differs in character. Perhaps Hawkewell is the richer of the two localities, as far as known at present—we say "localities," because it is the same seam of coal at both collieries which has just been cut. The specimens we have been favoured with from Haywood are more of a jet black than at Hawkewell, somewhat resembling rannel coal in outward appearance, and, comparatively speaking, will take flame like a match. It appears to us, as far as our observation has extended, that Haywood coal will stand as amongst Forest coal for the production of gas; and, as to the small, or lime coal, that also is of a first-class character for use by smiths and for steam purposes, on account of the intense heat which it will yield. This colliery, as is well known, is the property of the Littlewood Woodside Coal Company, which was registered in February, 1873, and commenced operations on May 1, following.

The company started with a capital of 25,000, in shares of 5s. each, all paid-up, the property being purchased by Mr. E. Craven, who holds a large number of shares, and is the managing director. Mr. Alfred Riddle being his co-director in office. The company first proceeded to clean out the old workings, build an additional engine house, put up two additional boilers, winding apparatus, and to increase the pumping capacity already there, and, further, a handsome chimney stack, which is quite an ornament to the town of Cleford. Having proceeded for some time to procure coal from the old workings, the company proceeded to sink the shaft 50 yards deeper, and cut a heading downward, and it was in following out this heading that the vein was struck on Friday, the 22nd, and proved on Monday, the 25th. The company also owns brickworks and a timber yard. These works are under the management of Mr. J. M. Johns, who has greatly improved the manufacture of bricks, and is now doing a trade—1874-5—of an average of 70,000, and for the current year will reach 800,000. Mr. Johns also superintended laying down a system of narrow gauge rails, thereby connecting the tips, one at the bottom of the town and the other in Holly Hill Wood. The rails, reckoned longitudinally, may be put down as including a run of about two miles. Mr. T. Smith is manager over all machinery at the colliery and over the men, and having great talent in adjusting mechanical apparatus, is a natural thing for us to have to say that all the machinery and apparatus are in perfect working order. Having to expend capital without getting much coal the shareholders have not had the advantage of regular dividends, but now a new cut of coal has been reached, which will give access to a good area, we hope the company may speedily rejoice in a season of prosperity. The property is considered a valuable one, and embraces upwards of 200 acres.

Mr. Craven, we understand, does not contemplate selling off much of his produce at Hawkewell Colliery, but purposes in due course to erect in plate or other works, and consume most of the coal on the spot. He is a native of the Forest, but spent many years in mining in Spain, and accumulated wealth, and being a generous and enterprising gentleman he is anxious to benefit the district (and, we trust, himself too), and spend his concluding years amongst the scenes of his early youth. We wish him every success. We have not time to recur to the question of this week, except just to say that writing last week under great pressure of time we scarcely did justice to our thoughts in saying that it would take many years to drain the deep strata of water. We will not now, however, go again into the question, but give our more settled opinion in some future communication. We will add, however, that the only expression in our last week's report, which we wish to change or qualify, is the one already specified—i.e., that perhaps it would take many years to pump out the water from the deep measures. Upon further reflection, we think that it could be done in from one to two years. But as we intend to return to the subject, the qualification of the expression referred to is all that we shall say in this communication on the subject. The improve-

ment in employment reported last week, though comparatively small, may, we think, with trifling exceptions, be reported as fairly maintained.

## THE ROMAN BOUNDARY MINE COMPANY, LIMITED.

(Incorporated under the Companies Acts, 1862 and 1867, with Limited Liability).

Capital £25,000, in 5000 shares of £5 each.

Issue of 4300 shares, payable £1 on application, £1 on allotment, and the balance in calls of £1 per share, as may be required, at intervals of not less than three months.

£5000 has been already subscribed by the directors, &c.

Interest at the rate of 5 per cent. allowed on all calls paid in advance.

#### DIRECTORS.

WILLIAM OULTON, Esq., Shipowner, Hillside, Woolton, near Liverpool.

DANIEL R. RATCLIFF, Esq., Mossley Hill, Liverpool, and Great Alne, Warwickshire (Managing Director of Milner's Safe Company, Limited).

DYKES ALEXANDER FOX, Esq., Claughton, Birkenhead (Messrs. Coventry and Fox, Merchants, Liverpool).

\*JAMES NANCARROW, Esq., Derby House, Rock Ferry (Messrs. Wakem, James and Co., Merchants, Liverpool).

SAMUEL JAMES CAPPER, Esq., New Brighton, Cheshire, Broker.

#### BANKERS.

ADELPHI BANK (LIMITED), Liverpool.

#### SOLICITORS.

Messrs. TYNDALL AND PAXTON, 8, North John-street, Liverpool.

#### AUDITORS.

ASTRUP CARISS, Esq., 40, Castle-street, Liverpool.

#### REGISTERED OFFICES.

LUCERNE BUILDINGS, REDCROSS STREET, LIVERPOOL.

#### PROSPECTUS.

This company has been incorporated for the purpose of acquiring all the beneficial interest in a lease, dated March 25, 1874, hereinafter referred to, and for working a valuable mineral vein in the parish of Warrington, in the county of Shropshire, and, in fact, in the parish of Warrington, in the county of Shropshire, the celebrated Roman Gravel and the West Tankerville Mines.

The metallic mining district of Shropshire forms a portion of the great Silurian basin of Central Wales. It is limited in extent, covering only about 70 square miles of ground, but has always been remarkable for the extreme richness of its lead deposits, and comprises within its limits several mines which have throughout the history of mining industry, from the earliest records to the present day, contributed more to the wealth of the country than those of any other district of like area. Conspicuous among its many rich mines are Snailbeach, Tankerville, and Roman Gravel. The first has been working continuously and making immense profits for the last hundred years; it may be considered one of the greatest lead mines in the kingdom, for although a few years ago Minera was a richer mine, and at the present time Van is producing more lead, yet, taking into consideration the permanence of its working and the length of time it has been making profits, Snailbeach will probably be found in the end to have yielded larger returns than almost any other lead mine in England. Tankerville is at present equally rich, having during the six years it has been worked by a limited liability company paid upwards of £2,200 in dividends. Roman Gravel takes its name from the fact that it was worked by the Roman soldiers in the time of the Emperor Hadrian; during the middle ages it was very productive, and at the present time is one of the principal mines of the district, yielding the large quantity of 200 tons of lead ore per month, and having paid £74,700 in dividends during the past five years.

One of the most notable geological characteristics of this district is the occurrence of bands of shale running across the course of the lodes, which in general increase in richness to an extraordinary extent when they come in contact with the shale. The Roman Gravel Mine is a conspicuous example of this peculiarity, for from the earliest workings to the present time the richest pipes of ore have been found in connection with the shale, uniformly following its dip or underlie, and increasing in value as depth is attained.

In the report issued to the shareholders of this mine by Capt. Waters on May 30, 1875, he states that from January, 1871, to March, 1875, the period during which the Roman Gravel Mine has been in the hands of the present company, 10,967 tons 5 cwt. of lead ore has been raised and sold, together with 330 tons of blende, which makes nearly 4½ per fathom, and after showing the immense reserves of ore in that part of the mine that has already been opened up, he concludes his report by saying that in his opinion this great mine is only in its infancy.

During and since the time of the Romans the principal workings were and have been carried out upon the Roman vein, and by reference to the accompanying section it will be seen that towards the north the workings have reached to within a short distance, about 10 fms., of the boundary in a valuable deposit of ore, still following the shale in its northerly dip towards and into the Roman Boundary Mine. It becomes, therefore, a matter of reasonable certainty that the sinking of a shaft on the Roman Boundary Mine set near to the boundary will lead, in a slightly increased depth, into the same deposit of ore that is now being worked by the Roman Gravel Mining Company within 50 ft. of their boundary. Evidence to this effect is given by the writers of the accompanying reports in the strongest and most positive terms. Mr. Walter Eddy says:—

"On occasions when officially employed inspecting the Roman Gravel Mine, my attention was taken at the surface by the closeness of its shaft to your boundary, being within about 30 fms. of it, and underground to the fact of the rich pipe of ore that yields such large returns there dipping very fast into your ground."

"An important question is, at what depth from surface will the continuation of this rich pipe of ore be met with in your set near the boundary?"

"Looking at the dip of the shale in the Roman Gravel Mine (about 1 in 1 in the direction of your ground, and the ore dips with it), I am decidedly of opinion that you will cut the ore at from 80 to 90 fms. from surface."

Capt. Enoch Parry's report fully confirms the foregoing opinion, and Capt. W. P. Harris writes:—

"The work on this (the Roman) lode at the 80 and 95 fathom levels in the Roman Gravel Mine show a rich course of lead ore dipping rapidly to the north under the shale; and consequently, at a slightly increased depth, the same course of ore will be found in your mine; this is an unquestionable fact, about which there cannot be any reasonable doubt."

"Judging from what these lodes have produced and are now yielding within a short distance of your boundary, there can be no doubt whatever of profitable results attending your operations."

The vendors of the Roman Gravel Mine contain several well known and productive lodes, which run nearly north and south and are traversed by canyons or cross lodes, making, within the boundaries of the set, numerous junctions, so much desired by practical miners.

The vendors have gone to considerable expenditure in making explorations, notably by driving a level near where the shaft is proposed to be sunk. The result has been to prove the highly-mineralised nature of the ground above the shale band. For the present, however, it is thought best to confine operations to sinking the shaft where it is known that the substance, though the heat of it is easily to be seen with much definiteness, because the proof of it is by far too limited to justify anything very peculiar in relation to that point.

As at Hawkewell, so at Haywood, the coal is of excellent quality, although, in some respects, it differs in character. Perhaps Hawkewell is the richer of the two localities, as far as known at present—we say "localities," because it is the same seam of coal at both collieries which has just been cut. The specimens we have been favoured with from Haywood are more of a jet black than at Hawkewell, somewhat resembling rannel coal in outward appearance, and, comparatively speaking, will take flame like a match. It appears to us, as far as our observation has extended, that Haywood coal will stand as amongst Forest coal for the production of gas; and, as to the small, or lime coal, that also is of a first-class character for use by smiths and for steam purposes, on account of the intense heat which it will yield. This colliery, as is well known, is the property of the Littlewood Woodside Coal Company, which was registered in February, 1873, and commenced operations on May 1, following.

The company started with a capital of 25,000, in shares of 5s. each, all paid-up, the property being purchased by Mr. E. Craven, who holds a large number of shares, and is the managing director. Mr. Alfred Riddle being his co-director in office. The company first proceeded to clean out the old workings, build an additional engine house, put up two additional boilers, winding apparatus, and to increase the pumping capacity already there, and, further, a handsome chimney stack, which is quite an ornament to the town of Cleford. Having proceeded for some time to procure coal from the old workings, the company proceeded to sink the shaft 50 yards deeper, and cut a heading downward, and it was in following out this heading that the vein was struck on Friday, the 22nd, and proved on Monday, the 25th. The company also owns brickworks and a timber yard. These works are under the management of Mr. J. M. Johns, who has greatly improved the manufacture of bricks, and is now doing a trade—1874-5—of an average of 70,000, and for the current year will reach 800,000. Mr. Johns also superintended laying down a system of narrow gauge rails, thereby connecting the tips, one at the bottom of the town and the other in Holly Hill Wood. The rails, reckoned longitudinally, may be put down as including a run of about two miles. Mr. T. Smith is manager over all machinery at the colliery and over the men, and having great talent in adjusting mechanical apparatus, is a natural thing for us to have to say that all the machinery and apparatus are in perfect working order. Having to expend capital without getting much coal the shareholders have not had the advantage of regular dividends, but now a new cut of coal has been reached, which will give access to a good area, we hope the company may speedily rejoice in a season of prosperity. The property is considered a valuable one, and embraces upwards of 200 acres.

Mr. Craven, we understand, does not contemplate selling off much of his produce at Hawkewell Colliery, but purposes in due course to erect in plate or other works, and consume most of the coal on the spot. He is a native of the Forest, but spent many years in mining in Spain, and accumulated wealth, and being a generous and enterprising gentleman he is anxious to benefit the district (and, we trust, himself too), and spend his concluding years amongst the scenes of his early youth. We wish him every success. We have not time to recur to the question of this week, except just to say that writing last week under great pressure of time we scarcely did justice to our thoughts in saying that it would take many years to drain the deep strata of water. We will not now, however, go again into the question, but give our more settled opinion in some future communication. We will add, however, that the only expression in our last week's report, which we wish to change or qualify, is the one already specified—i.e., that perhaps it would take many years to pump out the water from the deep measures. Upon further reflection, we think that it could be done in from one to two years. But as we intend to return to the subject, the qualification of the expression referred to is all that we shall say in this communication on the subject. The improve-

ment in employment reported last week, though comparatively small, may, we think, with trifling exceptions, be reported as fairly maintained.

REPORT BY WALTER EDDY, Esq., Mineral Surveyor of Fron, Llangollen; Capt. ENOCH PARRY, Manager of the Wotton Mine; Capt. B. MICHELL, Minera Mines, near Wrexham; and Capt. W. P. HARRIS, Manager of Bog and Pennerley Mines.

REPORT BY WALTER EDDY, Esq.

Fron, Llangollen, March, 1876.—I have much pleasure in handing you my report of an examination of this mineral ground.

It lies to the north of the Roman Gravel and West Tankerville Mines, adjoins them in that direction, and all the profitable productive veins hitherto found in both these mines run through this set.

The bearing or run of the principal lodes in this district, five or six in number, is from north to south, with an underlie to the east. I shall, however, confine my remarks to the Roman lode, from which all the lead ore now raised at the Roman Gravel Mine (about 20 tons monthly) is got.

On occasions when officially employed inspecting the Roman Gravel Mine, my attention was taken at the surface by the closeness of its shaft to your boundary, being within about 30 fms. of it, and underground to the fact of the rich pipe of ore that yields such large returns there dipping very fast into your ground.

An important question is, at what depth from surface will the continuation of this rich pipe of ore be met with in your set near the boundary?

Looking at the dip of the shale in the Roman Gravel Mine (about 1 in 1 in the direction of your ground, and the ore dips with it), I am decidedly of opinion that you will cut the ore at from 80 to 90 fms. from surface.

I would recommend you, therefore, to put down a shaft pretty near your boundary. It can be sunk cheaply, as it will be principally in shale for a considerable depth, and you will have but little water to contend with.

This shaft will not only cut the great shoot of ore coming from the Roman Gravel Mine, but will be in a capital position to cross one of the other important veins coming into your ground from this mine and West Tankerville.

I consider that you have a most valuable piece of mineral ground in the Roman Boundary set, and one that does not require a large capital to reach the ore and develop.

WALTER EDDY.

CAPT. ENOCH PARRY'S REPORT.

Chirbury, Sol. p. April, 1876.—In accordance with your request, I beg to hand you my report on the Roman Boundary Mine, a property I am intimately acquainted with.

\*Mr. Nancarrow does not take his seat at the board until the purchase is completed.

quainted with, and for the lease of which I have repeatedly applied during the last 12 or 14 years. I also know that others have done the same, and may, therefore, congratulate you on having secured what is generally believed to be a valuable property.

Having so long desired to obtain this mineral set for myself, you will readily understand that I have given the question of its development very careful consideration; and the long experience I have had, both as a miner and as an assessor in the mines immediately adjoining, enables me to submit my opinion with much confidence.

The set adjoins the Roman Gravel Mine on the north, the distance from the principal shaft in that mine to the boundary being only 30 fms.

The line of boundary is about E. 20 N., and W. 20 S., and the Roman lode, from which 200 tons per month are being raised, is a north and south lode, hence it enters your set nearly at right angles to the boundary.

In the Roman Gravel Mine, some distance south of the engine shaft, a great bed of shale commences and dips rapidly to the north, that is to say towards your set, and it is in connection with this shale that the Roman vein has always proved most productive, in evidence of which I will quote the following extract from the manager's report of the 1st March, 1873:—

"We find that the water is being drained out of the old workings in the bottom of the 65, north of the engine shaft, which workings are in a line with the Roman lode which was seen in the open-cut at surface, and followed down to the 65, the said ore dipping north conformably with the dip of the shale. It is said that the bottom of the old mine, 7 or 8 fms. below the 65, the lode is worth 500, per fathom."

The point at surface where the pipe of ore above referred to was seen, is about 60 fms. south of the engine shaft, and at the 65 below the said pipe of ore, it is about 20 fms. south of the engine shaft. The total depth from surface to the 65 fms.—20 fms. from surface to add, and 65 fms. below add, is shown that in 85 fms. sinking the ore has dipped north 80 fms.; and as the level of the 65 fms. level north is about 20 fms. from the boundary, it is the case that you have only to sink a shaft say, for certain, 30 fms. below the 65 fms. level of the Roman Gravel Mine to reach the said pipe of ore; and as your shaft will be started where the surface is 5 or 6 fms. lower than in the other case, you will secure a good course of ore ground at a depth of 115 fms. from surface.

It is most satisfactory to learn, from the weekly report in the Mining Journal, that from the date of the report quoted above until the present time, this lode in the Roman Gravel Mine continues to be highly productive down to the 65 fms. level (the 95), and that the pipes, or in fact a great course of ore ground, is dipping towards your set, and will enter it at the depth at which the mines in the district become most permanently profitable.

I might write much more about this lode and its value to you, but perhaps it will suffice to say that it is quite clear to me that it will of itself make a good and profitable mine in your property as it has in the Roman Gravel Mine.

The other proved lodes are the second north, the Wood, the Cornish, and the California lodes; the first named has produced ore in the upper workings of the Roman Gravel Mine, and is likely to prove of great value to you. The Wood lode enters your set from West Tankerville Mine; it is a fine lode, and the Wood lode, of tons of ore, and I am of opinion that in depth it will prove as rich as the Roman lode; a pipe of ore in it, following the shale in its northerly dip, has been worked down to the 48, and is at that depth only 15 fms. from your boundary, so that at 20 fathoms deeper it would dip into it. The Cornish lode has yielded a large quantity of lead and blende ore, and will enter your set at about the same depth as the Wood lode. The California lodes were rich from surface to the adit level in West Tankerville Mine.

In conclusion, I have only to advise you as to the mode of working your property. I would recommend you to sink an engine-shaft at from 10 to 15 fms. from your boundary, which would meet the Roman vein at about 100 to 115 fms. from the surface, and afford means for exploring two or three of the other lodes; and I believe when you have accomplished this work you will have opened up one of the most extensive and richest mines in the Shropshire district.

ENOCH PARRY.

#### REPORT BY CAPT. MICHELL.

Minera Mines, near Wrexham, June 7, 1876.—In reply to your letter of the 2nd inst., I beg to inform you that I inspected the Roman Gravel Mine in September, 1875, and fully agree with what is stated in Mr. Eddy's report, dated March, 1876, respecting the dip of the runs of ore and depth the ore may reasonably be expected to sink near the boundary.

The very fine course of ore I saw at several points when down Roman Gravel, and dipping in the direction of your set, together with four or five other well known productive lodes, cannot, in my opinion, fail to make a valuable and lasting mine, especially in a neighbourhood where the lodes prove rich to such a depth as in the Snailbeach and Tankerville Mines, the former 230 fms., and the latter 200 fms., and at this depth but little water to contend with.

In my opinion you cannot do better in opening the mine than by carrying out the suggestions of Messrs. Eddy, Parry, and Harris, by sinking a new shaft from the surface near the boundary, and cross-cutting the side lodes therefrom.

S. MICHELL.

#### CAPT. W. P. HARRIS'S REPORT.

Minerley, Solop, April, 1876.—Agreeably with your request, I have pleasure in handing you a brief report on the Roman Boundary Mine property.

Your property immediately adjoins the well known Roman Gravel Mine and West Tankerville Mine.

In October, 1874, I had occasion to visit the Roman Gravel Mine, and when underground I took particular notice of the main, or Roman, lode, which, with others, runs directly into your property at right angles to the boundary. The workings on this lode at the 80 and 95 fms. levels in the Roman Gravel Mine show a rich course of lead ore dipping rapidly to the north under the shale, and consequently, at a slightly increased depth, the same course of ore will be found in your mine. This is an unquestionable fact, about which there cannot be any reasonable doubt.

From the West Tankerville Mine your property receives several productive lodes, which have yielded large quantities of lead, particularly near the shaft.

The shaft has a northerly dip of about a fathom in a fathom; therefore, by sinking a shaft near the boundary, you will pass through it at a moderate depth, and be in a position to command most of the lodes to profitable advantage.

At the depth of 80 fms. you may calculate: upon reaching the Roman lode, at 100 fms. will have a tolerably good length of productive lode to explore; then by short cross-cuts you will be able to intersect and develop the other lodes—the Cornish, California, Cornish, and Wood lodes.

Judging from what these lodes have produced and are now yielding within a short distance of your boundary, there can be no doubt whatever of profitable results attending your operations.

You will require an engine for pumping and winding, but not one of great power. The ground is favourable for sinking; the engine-shaft, therefore, will not be a very expensive undertaking.

W. P. HARRIS.

The following Memoranda by the late HENRY CURWEN SALMONS, Esq., of the Lead-bearing District of Shropshire, may be found interesting.

The geological relations of the Shropshire mining district, so far as they affect the workings of the mines, are by no means simple. In the first place the lodes are interstratified with great beds of black lustrous shale, similar to the carbonaceous shale so frequently met with in connection with mining in the upper beds of the carboniferous limestone, and which cause the great deposits of ore that enrich the lodes. Sometimes these shale are mere bands a yard or so thick, but at other places they seem to be hundreds of fathoms thick, and to have a definite course through the country, occupying, as it were, large troughs in the lodes or blue stone. To the correlation of these great bands of carbonaceous shale may be distinctly traced the gigantic deposits of lead ore which equally characterise this and the Van districts. In the other lead districts of the country, such for instance as the counties of Cornwall and Cardigan, very excellent lead mines are met with, but the ore occurs more disseminated or drawn out, and the great quantity of ore probably ten times as much ground has to be opened and explored.

Some of the greatest lead mines of Cornwall are said to have yielded an average return of little more than ½ ton per fathom; and the reports of the leading Cornish mines show that their produce varies from 10 cwt. to an average maximum of 2 tons per fathom, while the Shropshire district, taken at a maximum, may be said to have yielded 8 to 10 tons per fathom. One of the most ancient and richest mines in this district is the Roman Gravel, probably the most ancient lead mine in Great Britain, having been undoubtedly worked by the Romans. It now affords a striking instance of the great similarity that exists between the modes of occurrence of the rich courses of ore in this and the Van districts; as in the Van Mine the great course of ore in Roman Gravel, which is worth many tons to the fathom, skirts a band of lustrous shale, with which it is evidently correlative, and indeed the occurrence of this shale in connection with the veins gives its great value to the Shropshire district.

#### FORM OF APPLICATION FOR SHARES.

TO THE DIRECTORS OF THE ROMAN BOUNDARY MINE COMPANY (LIMITED). GENTLEMEN.—I request that you will allot me \_\_\_\_\_ shares in the above named company, and I agree to accept of such shares for no less number you may allot me, subject to the provisions of the Memorandum and Articles of Association, and I hereby authorise my name to be entered in the Register of Members of the Company for the shares so allotted.

Signature \_\_\_\_\_

Name in full \_\_\_\_\_

Residence \_\_\_\_\_

Profession, or Business \_\_\_\_\_



**MAILSTONE COLLIERY,**  
BAGWORTH, LEICESTERSHIRE.  
THE UNDERSIGNED HEREBY GIVES NOTICE, to all whom it may concern, that as from the 21st instant, he is NO LONGER WORKING the ABOVE COLLIERY, and will not be HELD RESPONSIBLE FOR THE ABOVE LIABILITY incurred in connection therewith as from that date, and that his possession of and in the said Colliery is SOLELY as MORTGAGEE, and he is not to be held responsible for the same.  
JOSEPH J. ELLIS.  
22nd August, 1876.

**RUGBY, WARWICKSHIRE.**  
NOTICE TO CAPITALISTS, LIME, AND CEMENT MERCHANTS, BRICKMAKERS, AND OTHERS.  
FREEHOLD ESTATE, WITH BED OF FIRST CLASS BLUE LIMESTONE, FOUR COTTAGES, BRICKYARD, AND KILNS, &c.  
TO BE SOLD, BY AUCTION, by Messrs. TAIT AND BIRD, at the George Hotel, Rugby, on Wednesday, the 11th day of October, 1876, at 10 o'clock in the afternoon, in the following lot, or in such lots as may be offered at the time of sale, and subject to such conditions as will be then proposed.  
**FREEHOLD LAND.**  
About half a mile from Rugby, on and adjoining the road to Newbold-on-Avon, comprising about seventeen acres, more or less, under which there are valuable beds of Blue Lias Limestone, similar in quality to that from which the Victoria Cement Works, in the immediate neighbourhood of the said Rugby Portland Cement.

The property adjoins the Oxford Canal, and is within a few hundred yards of a railway station, and is a comparatively small cost, the proved excellence of the Blue Lias Limestone in this neighbourhood ensuring a large and profitable return.  
The property is situated on a comparatively small cost, the proved excellence of the Blue Lias Limestone in this neighbourhood ensuring a large and profitable return.  
The property is situated on a comparatively small cost, the proved excellence of the Blue Lias Limestone in this neighbourhood ensuring a large and profitable return.

**RUBON COAL FIELD.**  
**IFTON RHYN AND GOWEN COLLIERIES,**  
NEAR OSWESTRY.  
TO BE SOLD, BY TENDER, in the following Lots:—  
Lot 1.  
THE UNDERSIGNED HEREBY GIVES NOTICE, to all whom it may concern, that as from the 21st instant, he is NO LONGER WORKING the ABOVE COLLIERY, and will not be HELD RESPONSIBLE FOR THE ABOVE LIABILITY incurred in connection therewith as from that date, and that his possession of and in the said Colliery is SOLELY as MORTGAGEE, and he is not to be held responsible for the same.  
JOSEPH J. ELLIS.  
22nd August, 1876.

**THE TREVARRACK MINING COMPANY (LIMITED).**  
IN LIQUIDATION.  
LELAND, near HAYLE, CORNWALL.  
**MESSRS. COOPER AND GOULDING WILL SELL, BY AUCTION,** by order of the Liquidator, at the TREVARRACK MINE, on Monday, October 9th, at Twelve precisely, the WHOLE of the VALUABLE MINING PLANT AND MATERIALS, including a superior 34 in. cylinder PUMPING ENGINE, 9 ft. stroke, with 10 ton BOILER; 106 fms. of 6 to 9 in. pumps; matchings; working barrels; H pieces; plunger poles; pole cases; top door pieces; windroves; main and bucket rods; strapping plates; hammer caps; an angle bob; bolts and burrs; 23 fms. of chain; horse whelm and tackle; smiths' bellows; anvil; smiths' and miners' tools; double purchase crab; the timber erections of shops and account house and other useful plant.  
May be viewed on application to the agent, at the Mine, of whom catalogues may be obtained; or of the Liquidator, GEORGE STILL, Esq., 35, Ethelburga House, London, E.C.; and of the Auctioneers, 79 and 71, Bishopsgate-street Within, London.

**CARDIGANSHIRE.**  
**NEW LISBURN MINE.**  
TO BE SOLD, BY PRIVATE CONTRACT, by the Executrix of the late GEORGE PELL, Esq., deceased, a FREEHOLD ESTATE, with the MINING MATERIALS now in use thereon, comprising the above Mine, and with the MINING LEASES of adjoining properties, as a going concern. The value of the Mine and the adjoining properties, as a going concern, is estimated at £10,000. Plans and particulars apply to WALTER EDDY, Esq., Llangollen; and to Capt. BALL, on the Mine.

**TAMAR VALLEY SILVER LEAD MINE, DEVON.**  
TO BE SOLD, BY PRIVATE TREATY, by the executrix of the late GEORGE PELL, Esq., deceased, all that desirable MINING SETT, in the parish of BECKERERRIS, in the county of DEVON, together with MACHINERY and MATERIALS now in use on the said mine, which will be sold FOR SALE as a GOING CONCERN.  
Plans and particulars, apply to WALTER EDDY, Esq., Llangollen; and to Capt. BALL, on the Mine.

**TO CAPITALISTS.**  
TO BE SOLD, in order to its full development, a well proved and partly developed  
**SLATE QUARRY**  
NORTH WALES. Composition, colour, and cleavage of the rock good. The proprietors are willing to retain and may increase their interest in the quarry, apply to D. C. DAVIES, Mining Geologist, &c., Oswestry, who will recommend the above as a sound and good undertaking.

**SLATE QUARRY.**  
TO BE SOLD, BY PRIVATE CONTRACT, an EXTENSIVE and VALUABLE SLATE QUARRY in NORTH WALES. The quarry has been opened out, and already produces considerable quantities of slates and slates of good quality, and the output can be much increased by a small outlay of capital.  
The quarry is situated in the heart of the Whitehaven district, and on its boundary is within 80 yards of the Whitehaven, Cleator, and Egremont Railway, and is bounded on the north by the Whitehaven, Cleator, and Egremont Railway, and is bounded on the north by the Whitehaven, Cleator, and Egremont Railway.

**TO CAPITALISTS OR PROMOTERS DESIRING TO MAKE MONEY.**  
TO BE SOLD, a COLLIERY ROYALTY in NORTH WALES, close to rail shipping port; several shafts partially sunk; coal fully proved in seams of good HOUSE and STEAM COALS, in an area of upwards of 100 acres of surface. It adjoins the West Mostyn Coal Field, just successfully worked, where under seams (including Cannel) have been proved in addition to the coal; so that eminent engineers state that the available coal in this royalty is of the best quality.  
The holder will arrange to sell the entire to an individual or company for a term of years, or for life, at a profit made above, which, even in a normal state of the coal trade, will be large. Certain and safe surveys by eminent Stafford and Welsh engineers have already been made.  
Messrs. WATSON, 27, Hamilton square, Birkenhead.

**CROSSGILL HEMATITE IRON ORE MINES.**  
TO BE LET, BY TENDER, for a term of years, to commence on the 1st day of January, 1877, the IRON ORE under 11 acres of ancient HOLD LAND, at CROSSGILL, near Frizington, in the parish of Arlecdon, county of Cumberland.  
The mine is situated in the heart of the Whitehaven district, and on its boundary is within 80 yards of the Whitehaven, Cleator, and Egremont Railway, and is bounded on the north by the Whitehaven, Cleator, and Egremont Railway, and is bounded on the north by the Whitehaven, Cleator, and Egremont Railway.

The mine is situated in the heart of the Whitehaven district, and on its boundary is within 80 yards of the Whitehaven, Cleator, and Egremont Railway, and is bounded on the north by the Whitehaven, Cleator, and Egremont Railway, and is bounded on the north by the Whitehaven, Cleator, and Egremont Railway.  
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In the Court of the Vice-Warden of the Stannaries, Stannaries of Cornwall.

**IN THE MATTER OF THE COMPANIES ACTS, 1862 AND 1867, and of the WEST WHEAL GORLAND MINING COMPANY.**—Notice is hereby given, that a PETITION for the WINDING UP of the above named company by the Court was, on the 14th day of September inst., presented to the Vice-Warden of the Stannaries by John Lidgey, of Redruth, in the county of Cornwall, merchant, on behalf of himself and George Cornish, his co-partner in trade, carrying on business at Redruth aforesaid as merchants, under the firm of Cornish and Company, claiming to be creditors of the said mining company, and that the said petition is directed to be heard before the Vice-Warden, at the Princes Hall, in Truro, within the said Stannaries, on Tuesday, the 17th day of October next, at Eleven o'clock in the forenoon.  
Any contributory or creditor of the said mining company may appear at the hearing and oppose the same, provided he has given at least two clear days' notice to the petitioners, their solicitor, or his agents, of his intention to do so, such notice to be forthwith forwarded to P. P. Smith, Esq., Secretary of the Vice-Warden, Truro.

Every contributory or creditor is entitled to a copy of the petition and affidavit verifying the same, on payment of the regulated charge per folio.  
Affidavits intended to be used at the hearing, in opposition to the petition, must be filed at the Registrar's Office, Truro, on or before the 14th day of October next, and notice thereof must at the same time be given to the petitioners, their solicitor, or his agents.  
HODGE, HOCKIN, AND MARRACK, Truro  
(Agents for B. T. G. Downing, Redruth, Petitioners' Solicitor).  
Dated Truro, Sept. 23, 1876.

**WAREHAM, DORSET.**  
**SALE OF THE PROPERTY KNOWN AS THE PURBECK CEMENT AND STONE COMPANY (LIMITED).**  
**MR. W. FURBER WILL SELL, BY AUCTION,** by order of the Mortgagees, at the Red Lion Hotel, Wareham, Dorset, on Tuesday, October 3rd, 1876, at Two for Three o'clock precisely, all that VALUABLE PROPERTY, known as described above, situated at the Ridge near Wareham, together with a 30 horse power STEAM ENGINE and PLANT, with all the manufactured and unmanufactured stock in trade now upon the premises, in One Lot.  
Further particulars and conditions of sale to be obtained of Messrs. COXWELL, BASSETT, and STANTON, Solicitors, Gloucester-square, Southampton; or of the Auctioneer, 22, Above Bar, Southampton.

**FROGHALL, STAFFORDSHIRE.**  
**IMPORTANT SALE OF VALUABLE MACHINERY, COSTLY MINING PLANT AND MATERIALS,** Horses, Colts, Carts, Stone and Timber Drags, Oak, Ash, Elm, and other Timber, &c., belonging to the Executors of the late JOSEPH SOUTHALL, Esq., and now lying at and near Froghall, Staffordshire, to be OFFERED FOR UNRESERVED PUBLIC COMPETITION, by  
**MESSRS. FERGUSON AND SON,** on Thursday, the 5th day of October, 1876.  
Business to commence at One o'clock prompt.  
The whole of the machinery is in excellent working order, and the materials of the best possible description, and lie in proximity to Froghall Railway Station, on the Churnet Valley Branch of the North Staffordshire Railway.  
To view the lots, for catalogues, and all other information, application can be made to JOSEPH SOUTHALL, Esq., The Grange, Ipstones, via Cheddle; or to Messrs. FERGUSON AND SON, Auctioneers, Leek.  
Auction and Valuation Offices, Stockwell-street, Leek.

**THE TREVARRACK MINING COMPANY (LIMITED).**  
IN LIQUIDATION.  
LELAND, near HAYLE, CORNWALL.  
**MESSRS. COOPER AND GOULDING WILL SELL, BY AUCTION,** by order of the Liquidator, at the TREVARRACK MINE, on Monday, October 9th, at Twelve precisely, the WHOLE of the VALUABLE MINING PLANT AND MATERIALS, including a superior 34 in. cylinder PUMPING ENGINE, 9 ft. stroke, with 10 ton BOILER; 106 fms. of 6 to 9 in. pumps; matchings; working barrels; H pieces; plunger poles; pole cases; top door pieces; windroves; main and bucket rods; strapping plates; hammer caps; an angle bob; bolts and burrs; 23 fms. of chain; horse whelm and tackle; smiths' bellows; anvil; smiths' and miners' tools; double purchase crab; the timber erections of shops and account house and other useful plant.  
May be viewed on application to the agent, at the Mine, of whom catalogues may be obtained; or of the Liquidator, GEORGE STILL, Esq., 35, Ethelburga House, London, E.C.; and of the Auctioneers, 79 and 71, Bishopsgate-street Within, London.

**CARMARTHENSHIRE.**  
**PENCADER CHEMICAL WORKS.**  
IMPORTANT AND UNRESERVED SALE.  
**MR. J. M. LEEDER has received instructions to SELL, BY PUBLIC AUCTION,** at the Maekworth Arms Hotel Swansea, on Friday, 13th October, 1876, at Three o'clock P.M. punctually (in consequence of the decease of one of the partners), all those  
**VALUABLE AND IMPORTANT CHEMICAL WORKS,**  
The whole standing on about three acres of land, situate in the parish of Llanfihangel-ar-Arth, in the county of Carmarthen, including a substantially erected managers residence and offices, containing fixed iron fire-proof safe and other useful fixtures; together with the customary MACHINERY, PLANT, and APPLIANCES, including a STEAM ENGINE and TWO WATER WHEELS for working pumps, grinding products, and driving circular saw machinery for cutting wood, which, with the exception of the pumps, can be worked by steam and water combined or either separately, the whole being nearly new and in good working order.  
The property will be sold as a going concern, with all the stock in trade and manufactured and unmanufactured articles thereon.  
The Works are well situated for carrying on an extensive and lucrative trade, being amply supplied with water for condensing purposes. The Works have been erected about ten years, and are most substantially and compactly built. A railway runs through the property, the siding of which can accommodate twenty trucks at one time, and has a capital Pooley's weighing machine, and new machine house. The siding, points, crossings, and signals belong to the property, in consideration of which a rebate of 5 per cent. is allowed off railway traffic.  
Through or special rates are arranged to Liverpool, London, Manchester, and other large manufacturing towns.  
The London and North-Western, the Great Western, and two other railway companies work traffic direct on to the works.  
The immediate district abounds with chemical and other wood, a large quantity of which can be carted on to the premises.  
The plant is capable of producing 15 to 20 dozen of charcoal per week, and corresponding chemicals. A good trade could be advantageously carried on in timbers; and artificial manures can be manufactured on the premises.  
The whole of the foregoing premises are held under a lease for the unexpired residue of a term of 99 years, from the 29th day of September, 1868, at a low annual ground rent of £15.  
For further particulars and permission to view, apply to W. H. WILLIAMS, Esq., on the premises; to DANIEL MORRIS, Esq., Estate Agent, Crickhowell; to the Auctioneer, at his offices, Oxford Chambers, Swansea; to Messrs. GREEN and GRIFFITHS, Solicitors, Carmarthen; or to LEONARD D. BROWNE, Esq., Solicitor, Brynmawr and Aberavenny.

**MILTON ABBOTT, DEVON.**  
Immediately adjoining Messrs. SIMS most successful Chilton and Hogston Mines.  
**RE THE NARRACOTT MANGANESE MINING COMPANY (LIMITED).**  
IN LIQUIDATION.  
**MESSRS. SKARDON AND SONS WILL SELL, BY AUCTION,** on Tuesday, the 17th day of October, 1876, at Four o'clock precisely, at the Bedford Hotel, Tavistock, Devon,  
**THE NARRACOTT MANGANESE MINE,**  
In the parish of Milton Abbott, Devon, about seven miles from Tavistock, and six from Newquay, held for a term of 21 years from Midsummer, 1867, at a royalty of 12s. 6d. for every ton of 21 cwts. of manganese, dug, broken, raised, or gotten. Minimum rent £2 per annum, payable in advance. Also, the RIGHTS of WAY belonging to the mine. Together with the VALUABLE PLANT, MACHINERY, and MATERIALS for the purpose of working the same.  
There are four shafts sunk for the purpose of working the mine, and the buildings comprise an office, blacksmiths' shops, changing-house, tool-house, crushing and dressing floors, &c.  
The mine has been recently developed at considerable expense, and large manganese deposits have been proved to exist on the present property, and can be worked with hardly any further outlay.  
Copies of the grants may be seen at any time prior to the sale at the offices of the solicitors and auctioneers, and will be produced at the auction.  
The premises may be viewed any working day prior to the sale; and particulars and conditions of sale, and an Inventory of the Plant and Materials, may be obtained of the Auctioneers, 11, Bedford-street, Plymouth; or of Mr. G. B. SANDEMAN, No. 4, Bishopsgate-street Within, E.C.; or of Messrs. TRINDERS and CURTIS HAYWARD, Solicitors, 4, Bishopsgate-street Within, London.

**IN LIQUIDATION.**  
**THE GARDEN LODGE COAL, COKE, AND FIRE-BRICK COMPANY (LIMITED).**  
**TO BE SOLD, BY PRIVATE TREATY, the GARDEN LODGE COLLIERY,**  
Close to RUBON, in NORTH WALES. The Colliery and Mines are held under a lease for 30 years, from March, 1863 (with power to extend for seven years further), and on very favourable terms as regards royalties, &c.  
The MINES comprise 13 VALUABLE SEAMS of COAL under upwards of 100 acres of land, the united thickness of which seams is about 45 ft.  
Also, excellent BEDS of IRONSTONE and FIRECLAY, which are now being worked. There are also 24 COKE OVENS, recently erected on the estate by the company on the most approved principle, with all the fittings and appliances. A siding connects the works with the Great Western Railway.  
The concern (except the coke ovens) is in full working order, and satisfactory reasons can be given for winding up the company.  
The premises can be viewed, and full details had on application to Mr. JOHN TURNER, Garden Lodge, Rubon; or to Mr. JOSEPH REAP, Rochdale, Solicitor to the Liquidator.

**MANGANESE AND SULPHUR ORES.**  
**MESSRS. BROWN, BUTLER, AND CO.,** MINERAL MERCHANTS, AGENTS, AND BROKERS, ARE OPEN TO TREAT FOR THE PURCHASE OF LARGE QUANTITIES of the ABOVE or other MINERALS, to be delivered in Liverpool.  
Address, with particulars, stating quality and price, to Brockley Buildings, South John street, Liverpool.  
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**SULPHATE OF BARYTES FOR SALE.**—Fine powdered, beautifully white; also in the Rock or Crude State, free from Lime and Metallic Oxide.  
Samples on application to—  
**RUTHWAITE BARYTES MINING COMPANY,**  
Nov. 17, 1875. WHITEHAVEN.

**FOR SALE:—**  
A 40 in. CORNISH BEAM PUMPING ENGINE, 9 ft. stroke in cylinder, and 7 ft. in shaft (by Perran Foundry Company), in good condition.  
THREE 30 ft. by 6 ft. 6 in. SINGLE FLUED BOILERS, with all fittings complete—one of the above nearly new.  
ONE 12 in. cylinder HORIZONTAL STEAM CAPSTAN, with drawing gear and drum complete, is equal to new.  
Price for the lot as they stand, £450.  
Apply—  
**JAMES PAYNE, WREXHAM.**

**FOR SALE, a 18-horse power PORTABLE STEAM ENGINE,** with link motion reversing gear, ready for delivery.  
A 25-horse power PORTABLE.  
An 18-horse power VERTICAL STEAM ENGINE, with link motion reversing gear, also gear to wind and pump.  
A 9 ft. PAN MORTAR MILL, VERTICAL ENGINE, and BOILER.  
Apply to—  
**BARROWS AND STEWART, ENGINEERS, BANBURY.**

**MINING MACHINERY AND MATERIALS.**  
**ON SALE, BY PRIVATE CONTRACT, at ST. IVES CONSOLS**  
MINE, St. Ives, Cornwall:—  
ONE 20 in. cylinder WINDING ENGINE, with a 10 ton BOILER.  
ONE 22 in. WINDING ENGINE, with BOILER 8 tons.  
ONE BOILER, 10 tons, with fittings, complete.  
ONE BOILER, 10 tons, with fittings, complete.  
ONE BOILER, 5 tons, without fittings.  
PIPEWORK, various sizes, 18 in., 12 in., 9 in., 8 in., 7 in., and 6 in.  
All the above are in excellent condition.  
Apply to Mr. GEORGE TREWEAK, St. Ives, Cornwall.

**ON SALE, TWO CORNISH BOILERS, 30 ft. by 7 ft. diameter,** Two flues through each. Safe at 60 lbs. pressure working.  
Apply to HENRY PARKINSON, Foundry-street, Bolton.

**ON SALE, ONE PAIR of 18 in. high-pressure HORIZONTAL** ENGINES, for winding, fitted with slot link motion. First-class pair of engines.  
Apply to HENRY PARKINSON, Foundry-street, Bolton.

**ON SALE, ONE PAIR of 15 in. HORIZONTAL WINDING** ENGINES, with slot link motion. Will be sold cheap.  
Apply to HENRY PARKINSON, Foundry-street, Bolton.

**ON SALE, ONE 25-horse power double cylinder PORTABLE** ENGINE, fitted with slot link motion for winding.  
ONE 20-horse power double cylinder PORTABLE ENGINE.  
Will be sold cheap, and are in first-class order.  
Apply to HENRY PARKINSON, Foundry-street, Bolton, Lancashire.

**ON SALE, ONE 8-horse power PORTABLE ENGINE,** fitted up with winding drum; slot link motion; made by Clayton and Shuttleworth. Price £10.  
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**ON SALE, ONE PAIR of 25 inch. coupled HORIZONTAL** WINDING ENGINES, with drums and brake gear. Also ONE PAIR of 22 in. ditto. Will be sold cheap.  
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**ON SALE, ONE strong well-built condensing BEAM ENGINE,** by a first class maker, equal to new; cylinder 36 in. bore, 5 ft. stroke. Can be seen standing, and will be sold cheap. ONE close-built self-contained condensing BEAM ENGINE, stands on independent bed on six columns; cylinder 28 in. bore, 4 ft. stroke. As good as new. Can be seen standing, and will be sold cheap.  
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**BOILERS ON SALE.—FOUR GALLOWAY'S PATENT** BOILERS, 30 ft. by 7 ft., safe to work at 70 lbs. on the square inch.  
TWO BOILERS, 28 ft. by 7 ft., with two flues through.  
TWO BOILERS, 26 ft. by 7 ft., two flues through.  
ONE BOILER, 20 ft. by 7 ft., two flues through.  
ONE BOILER, 18 ft. by 6 ft., one flue through.  
Also several smaller sizes.  
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**ON SALE, ONE 16 horse power double cylinder PORTABLE** ENGINE, for winding.  
ONE 12 horse power PORTABLE ENGINE.  
ONE 10 horse power PORTABLE ENGINE.  
ONE 8 horse power PORTABLE ENGINE.  
ONE 6 horse power PORTABLE ENGINE.  
Equal to new, and will be sold cheap.  
Apply to HENRY PARKINSON, Foundry-street, Bolton.

**ON SALE, ONE PAIR of 25 in. horizontal WINDING ENGINES.**  
ONE PAIR of 18 in. horizontal WINDING ENGINES.  
ONE PAIR of 16 in. horizontal WINDING ENGINES.  
ONE PAIR of 15 in. horizontal WINDING ENGINES.  
ONE PAIR of 12 in. horizontal WINDING ENGINES.  
ONE PAIR of 10 in. horizontal WINDING ENGINES.  
ONE PAIR of 7 in. horizontal WINDING ENGINES.  
The above engines are now ready for delivery, and fitted with winding drum and brake gear to each pair of engines.  
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MATHEMATICAL, DRAWING, AND SURVEYING INSTRUMENTS of every description, of the highest quality and finish, at the most moderate prices.  
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**THE BIRMINGHAM WAGON COMPANY (LIMITED)**  
MANUFACTURE RAILWAY WAGONS OF EVERY DESCRIPTION, for HIRE and SALE, on immediate or deferred payments. They have also wagons or hire capable of carrying 6, 8, and 10 tons, part of which are constructed specially for shipping purposes. Wagons in working order maintained by contract.  
EDMUND FOWLER, Managing Director.

**WAGON WORKS.—SMETHWICK, BIRMINGHAM.**  
\* Loans received on Debenture; particulars on application.

**NOTICE TO CORNISH MINE SHAREHOLDERS, AND INTENDING INVESTORS.**  
**MR. R. TREDINNICK,** Consulting Mining Engineer, will VISIT CORNWALL during the months of OCTOBER and NOVEMBER next on a SPECIAL COMMISSION of INSPECTION of various MINES situate in the several Mineral Districts of that county.  
The collapse in the price of tin has caused a revolution in tin properties, and it behoves non-resident shareholders to ascertain from independent authorities the true position of the mines in which they hold shares. Many ought to be shut up and abandoned, while others may not only weather the storm, but pay well at ruling prices for black tin. As regards the former, shares should be sold or abandoned through relinquishment. Correct data and intelligence for a fee of One Guinea. Special reports founded on inspection by Mr. TREDINNICK or his agents Three Guineas per mine. Selected List of approved Mines for Investment, One Guinea. All fees paid in advance.  
Attendances daily, and letters to be addressed, up to the end of September, to 79, Cornhill, E.C.; and after that date, under cover, to the Editor of the MINING JOURNAL, 56, Fleet-street, London.

Early engagements are requested, so that as little delay and inconvenience as possible may be occasioned.  
SHARES in a few PROGRESSIVE MINES in NORTH and SOUTH WALES, YORKSHIRE, and DURHAM can now be purchased with advantage, and of which Mr. TREDINNICK possesses exceptional access to accurate data and intelligence.  
**MR. J. S. MERRRY**  
ASSAYER AND ANALYTICAL CHEMIST,  
SWANSEA.



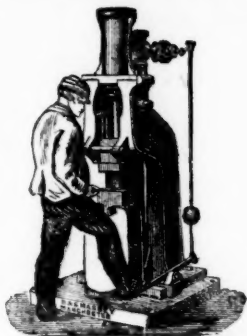
# B. & S. MASSEY, OPENSHAW, MANCHESTER.

Prize Medals—Paris, 1867; Havre, 1868; Highland Society, 1870; Liverpool, 1871; Moscow, 1872; Vienna, 1873; Scientific Industry Society, 1875; Leeds, 1876; Paris, 1877.

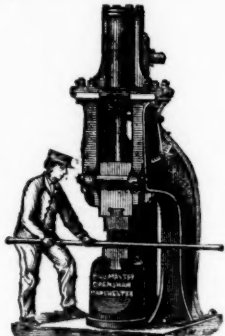
PATENTEES AND MAKERS OF DOUBLE AND SINGLE-ACTING

## STEAM HAMMERS

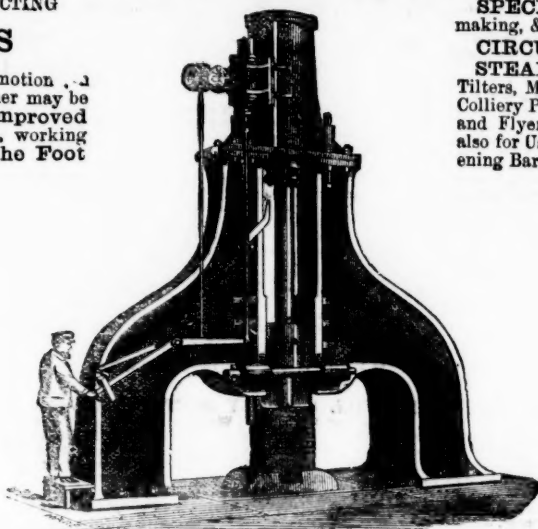
Of all sizes, from  $\frac{1}{2}$  cwt. to 20 tons, with self-acting or hand motion, either case giving a perfectly DEAD BLOW, while the former may be worked by hand when desired. Large Hammers, with Improved Framing, in Cast or Wrought Iron. Small Hammers, working up to 500 blows per minute, in some cases being worked by the Foot of the Smith, and not requiring any separate Driver.



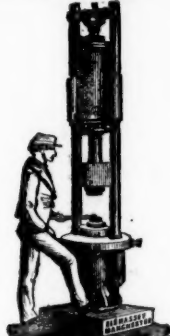
Small Hammer with Foot Motion.



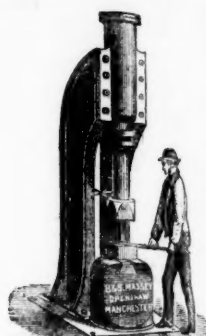
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Steam Hammer for Heavy Forging.



Special Steam Stamp.



General Smithy Hammer.

From 60 to 100 Steam Hammers and Steam Stamps may usually be seen in construction at the Works.

SPECIAL STEAM STAMPS, for Forging, Stamping, Punching, Bolt-making, &c.

CIRCULAR SAWS for Hot Iron.

STEAM HAMMERS for Engineers, Machinists, Shipbuilders, Steel Tilters, Millwrights, Copper-smiths, Railway Carriage and Wagon Builders, Colliery Proprietors, Ship Smiths, Bolt Makers, Cutlers, File Makers, Spindle and Flyer Makers, Spade Makers, Locomotive and other Wheel Makers, &c. also for Use in Repairing Smithies of Mills and Works of all kinds; for straightening Bars, bending Cranks breaking Pig-iron, &c.

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REPORT AND PROCEEDINGS FOR THE YEAR 1875.  
The original papers contained in the volume include Phosphorite Mining, by Joseph Garland; The Diamond Rock Borer, by Major Beaumont; On a Deposit of Tin at Park of Mines, by C. Le Neve Foster, B.A., D.Sc., &c.; On the Pawton Iron Mine, by J. H. Collins, F.G.S.; On Mechanical Appliances for the Drainage of Mines, by Stephen Holman; Surface Drainage of Mining Districts, by C. Bolton; On the Elvan Course of Cornwall, by W. H. Argall; Note on a Cross-Section from Cook's Kitchen Mine to Wheal Henrietta, by John Maynard; and Note on Three Sections of Lead Districts in Cornwall, showing the Productive and Unproductive Rocks, by T. Clark.  
In addition to these there are the reports of District Meetings, Excursions, Officers, Prizes, &c., forming a complete record of the progress of the Association.  
London: MINING JOURNAL Office, 26, Fleet-street, London, E.C.

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For sale, and supplied by—  
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Second Edition. Just published, price 8s. 6d.  
**A NEW GUIDE TO THE IRON TRADE:**  
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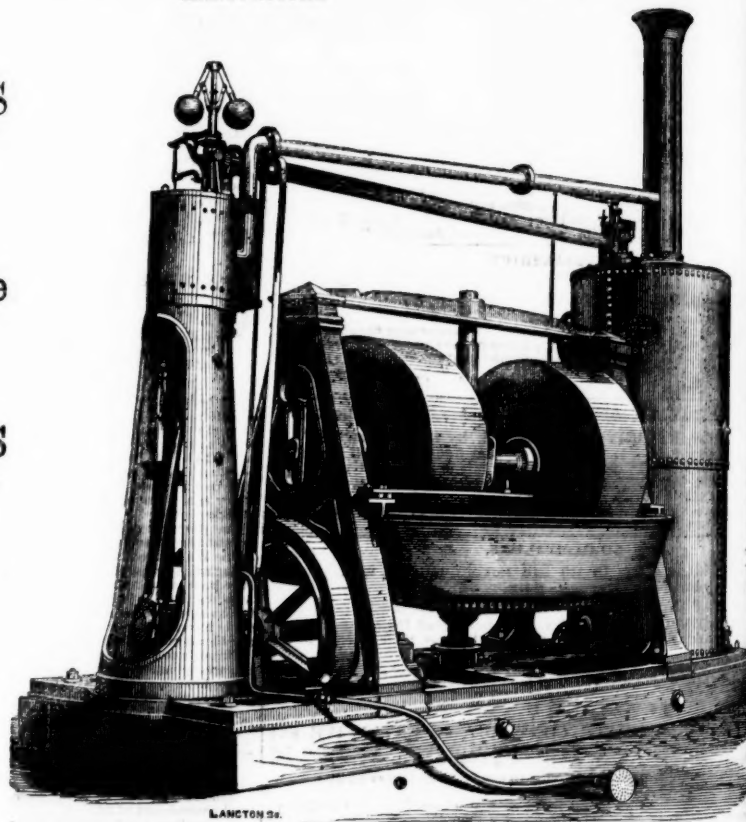
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Winding,  
Pumping, and Ore  
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ALSO,  
**COMBINED MILLS  
and ENGINES,  
with or without  
BOILERS,  
for Grinding  
Cinders, Sand,  
Mortar, &c.**



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W. and S. FIRTH undertake to CUT, economically, the hardest CANNEL, ANTHRACITE, SHALE, or ORDINARY COAL, ANY DEPTH, UP TO FIVE FEET.

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Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions.  
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### CROWN POINT FOUNDRY, LEEDS.

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Is the MOST ECONOMICAL and POWERFUL EXPLOSIVE for every kind of MINING and QUARRYING OPERATIONS; for blasting in hard or soft, wet or dry ROCKS; for clearing land of TREE ROOTS and BOULDER STONES; for rending massive BLOCKS of METAL; for SUBAQUEOUS and TORPEDO purposes; and for recovering or clearing away of WRECKS, &c.  
**ITS SAFETY** is evidenced by the total ABSENCE OF ACCIDENTS in transit and storage; it is insensible to heavy shocks, its GIANT POWER being only fully developed when fired with a powerful percussion detonator, and hence its great safety.  
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 Rock Borers, Air Compressors, and Electric Blasting Apparatus.  
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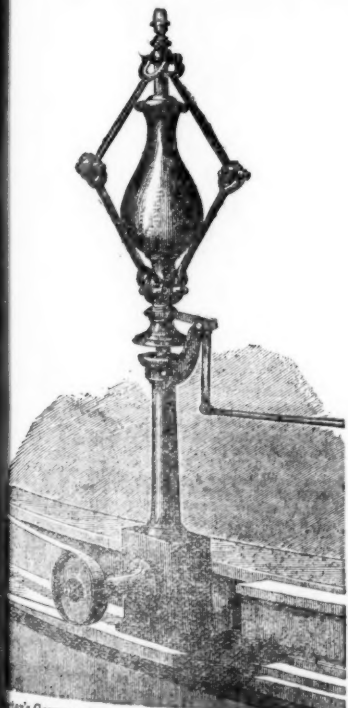
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1000	Western Union, 7 per cent. Mort. Bonds	.....	1000	.....	1000
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1	Glaiefield Whinstone Quarry	.....	1	00	1
17	Hudson's Bay Company	.....	17	00	17 1/2
10	Huntington Copper and Sul. Co.	.....	100	00	75
Stk.	Illinois Central, \$100 shares	.....	100	00	87 1/2
Stk.	Illinois & St. Lou. Bridge & R.R.	.....	100	00	87 1/2
Stk.	Iditto, 2nd Mort., 7 per cent.	.....	100	00	55
Stk.	Illinois Cent. Sinking Fund, 5 p. cent.	.....	100	00	100 1/2
tk.	Iditto, 5 per cent.	.....	100	00	111 1/2
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—	Iditto, Surplus Certificate	.....	100	00	100
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